School engagement in the Project Energize health intervention programme.

'What works, what does not work, what next?'

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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any degree or diploma of a university or institution of higher learning.

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Anna Mrkusic

Glossary

Anthropometric measurements	A set of non-invasive, quantitative techniques for determining an individual's body fat composition by measuring, recording, and analysing specific dimensions of the body, such as height and weight; skin-fold thickness; and bodily circumference at the waist, hip, and chest.
Boil-up	In New Zealand a boil-up is a term used to describe a cooking method used by Māori people. It involves placing meat and vegetables in a large pot and boiling them together for an extended period of time.
Decile	A decile indicates the extent to which a school draws its students from low socio-economic communities. Decile 1 schools are the 10% of schools with the highest proportion of students from low socio-economic communities. Decile 10 schools are the 10% of schools with the lowest proportion of these students.
	One school interviewed was classified as a decile 1, c. This is the lowest classification possible.
Energizer	Either a teacher of graduate or exercise and nutrition or physical education employed by Sport Waikato or the Māori and Pacific sub-contractors to support the delivery and development of Project Energize.
European/ Other (NZEO)	New Zealand European and other ethnic groups.
Level of Deprivation	Lay term used to describe the 2006 New Zealand Deprivation Index (NZDep2006). NZDep2006 is an area-based index of deprivation that measures levels (deciles or quintiles) of socioeconomic deprivation. In this report, quintiles of deprivation were used (1=least deprived 20% of areas; 5=most deprived 20% of areas).
Marae	In Māori society the marae is a communal and sacred place which serves religious and social purposes, including family

celebrations, welcoming visitors and farewelling the dead.

Māori	The native or indigenous Polynesian people of New Zealand.
Obesogenic environment	A set of circumstances that encourage people to eat and drink more calories than they expend, resulting in weight gain and obesity.
Pākehā	Pākehā is a Māori language word for New Zealanders who are not of Māori blood lines. They are mostly descended from British and to a lesser extent Irish settlers of the nineteenth and twentieth centuries, although some Pākehā have Dutch, Scandinavian, German, Yugoslav or other ancestry.
School leader	Either school principal, deputy school principal or teacher in charge of Project Energize in the school.
Thematic analysis	Thematic analysis is an approach to dealing with qualitative data that involves the creation and application of 'codes' to classify data. The 'data' being analysed may be extracted from any number of forms, for example an interview transcript, field notes, policy documents, photographs, video footage. For text the analysis is usually in the form of phrases or sentences, and contains key words or themes.
Whānau	Whānau is a Māori-language word for extended family.

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Abstract

Rates of overweight and obesity have continued to rise amongst primary school children including those in New Zealand, with higher prevalence in non-European children and those living in more deprived areas.

The school setting has been identified as an ideal environment for interventions to improve child health by supporting daily moderate and vigorous physical activity and healthier eating patterns.

Project Energize has been operating in Waikato primary schools since 2005. In 2011 the Project Energize programme delivered by Sport Waikato included 40,000 children, 244 schools, and 27 "Energizers" including one dietitian. Energizers are assigned 8-12 schools each and act as a "one stop shop" to support activities that promote and coordinate improved nutrition and physical activity within schools. In early 2011 a formal evaluation involving 192 schools which had been engaged with the Project Energize for eighteen months or more was undertaken. The evaluation included anthropometric measurements, school stocktake, home-questionnaire and lead teacher interviews to assess student health outcomes and Project Energize programme implementation.

This body of work aimed to identify factors associated with school engagement and participation in Project Energize and to develop an understanding of the context of those factors so recommendations can be made to raise levels of engagement in low-engaged schools. This projects asks, are engagement and participation associated with programme effectiveness in Project Energize?

Methods:

In a purposively selected sub-sample of the 2011 Project Energize evaluation study, lead teachers in 25 of the 192 schools undertook a structured interview. Independently, scores for engagement were derived from stocktakes of the nutrition and physical activity environment (n=192), Energizer school ratings (n=192) and responses from school leader interviews (n=25). Scores were compared using Spearman rank coefficients. Responses from open ended interview questions were thematically analysed to identify common perceptions.

Results:

School ratings based on measures and perceptions of levels of engagement and participation showed strongest agreement between the Energizer ratings and the score derived from the school interviews (ρ=0.676, P<0.000, n=24), levels of engagement and participation mediated by socio-economic status and ethnicity. Themes derived from the interviews relating to positive engagement were perceptions of a school community health need, commitment of school leaders, and effective interaction with Energizers. All school leaders agreed that the Energizers were a vital part of the programme. Challenges to engagement related to levels of parental support, curriculum demands, perceived need to fundraise with unhealthy food, transience and limitations in the time of interaction with the Energizer.

Conclusions:

Positive, meaningful engagement was observed in all schools, however factors were identified that restrict programme uptake. Engagement and participation in Project Energize are associated with programme effectiveness. The Project Director can use Energizer engagement ratings to prioritise programme resources to provide extra support to low engaged schools, in particular low decile schools with a high percentage of Māori students.

Chapter 1 Context - setting the scene

This chapter outlines the background to the study including an explanation of the increasing rate of weight gain (obesity) amongst New Zealand children. It is followed by a review of peer-reviewed literature of through-school interventions and a description of how nutrition and physical activity in New Zealand primary school children in the Waikato region is being improved. The focus is on the role of the school. An explanation of the research rationale is provided followed by a description of the thesis structure.

1.1   Defining the problem

The prevalence of overweight and obesity has continued to rise amongst school children both internationally (Lobstein, Baur, & Uauy, 2004) and in New Zealand (Minister of Health, 2006.), with higher prevalence in Non-European children and those living in more deprived areas (Ministry of Health, 2009b). For example, the 2002 New Zealand National Children's Nutrition Survey (Ministry of Health, 2003) reported that 21.3% of children were overweight and 9.8% were obese with levels being highest for Pacific children, followed by Māori children. The more recent 2006/2007 New Zealand Health Survey found that 37.7% of Māori and 54.7% of Pacific children were either overweight or obese in comparison to 26.0% for Europeans and others (Ministry of Health, 2009a). Efforts to slow the rate of weight gain in children and reduce the prevalence of obesity have prompted serious discussions amongst multiple health agencies including the International Obesity Task Force (Lobstein et al., 2004). The foci for the treatment and prevention of youth obesity have centred on home, community and school settings with a synthesis of evidence for best practice recommendations (Flynn et al., 2006).

The school setting has been identified as an ideal environment for implementing interventions to improve child health by encouraging quality moderate and vigorous physical activity and healthier eating patterns at school (R. Carter et al., 2008; St. Leger, 1999). Not only do schools provide convenient access to large numbers of children, but they also provide opportunities to establish life-long healthy behaviours that have the potential to impact long-term health (Brown & Summerbell, 2009). Lifelong physical activity and eating patterns are established in childhood (Warren, Henry, Lightowler, Bradshaw, & Perwaiz, 2003) and this adds support for intervention programmes that target children in the earliest part of their life-course as possible. Since 1989, New

Zealand schools have been governed by Boards of Trustees (Ministry of Education, 2011) composed of parents elected by the school community. It is the responsibility of the board to ensure that schools provide a safe environment and quality education for all its students. The involvement of parents means that parents have a say in determining the direction and culture of the school, including health education.

The New Zealand primary school curriculum has always promoted health and physical education, but in practice the amount of time devoted to teacher expertise in this area has been limited (personal communication, Principal, 2011). The New Zealand Curriculum continues to provide a policy framework to support and underpin health education in New Zealand schools (Ministry of Education, 2007). This policy includes six over-arching principles, namely: the Treaty of Waitangi; cultural diversity; inclusion; high expectations; community engagement; and future focus (Ministry of Education, 2007). These principles, combined with health and physical education as a key learning area, fit with the Ottawa Charter guiding foundations for school health promotion (World Health Organisation, 1986).

A review (Brown & Summerbell, 2009) of thirty eight peer-reviewed publications of school intervention trials to reduce the prevalence of childhood obesity was not able to draw firm conclusions about their efficacy. Brown and Summerbell (2009) found that only one of three diet studies, five of fifteen physical activity studies and nine of twenty combined physical activity and diet studies demonstrated significant and meaningful improvements between the intervention and the control groups for body mass index (BMI). This review led the researchers to conclude that the findings were inconsistent, but that a combined diet and physical activity school-based intervention was the most effective intervention strategy to prevent children from becoming overweight in the long term.

Reasons for the mixed outcomes have been partially attributed to variances in programme design, length of follow-up, characteristics of the target population, and outcome measures. For example, some programmes measure anthropometric changes while others measure subjective behaviour and attitude change. Hence it is difficult for researchers to compare programme effectiveness (Davidson, 2007). Nevertheless, several meta-analyses and reviews of obesity prevention programmes in schools have concluded that the most successful interventions were those that were implemented

collaboratively; conducted in elementary schools; primarily included children of minority ethnicity; encouraged nutritional change; sought to reduce sedentary behaviour, involved school-wide changes in nutrition (Cook-Cottone, Casey, Feeley, & Baran, 2009); adopted a multidisciplinary team approach; and sought school policy and environmental changes (Sharma, 2007).

Cost effectiveness of programmes to date has not been evaluated as an outcome measure, although the argument has been presented and modelling has shown (Mernagh et al., 2010) that they are cost-effective. The cost effectiveness of school based physical activity and healthy eating programmes in children and adolescents was supported by the Australian Assessing Cost-Effectiveness in Obesity study which modelled that there were net savings to be made from school-based physical activity and healthy eating programmes (R. Carter et al., 2009; R. Carter et al., 2008).

While it is generally agreed that school-based intervention programmes certainly are a cost-effective method of addressing obesity, only one obesity prevention programme, Planet Health, has directly demonstrated that the programme targeting girls aged 10 years was cost-effective under all scenarios considered (Wang, Yang, Lowry, & Wechsler, 2003). Cost effectiveness looks at long-term outcomes, for example the working life of the child, but considering the serious nature of the global and national economic environment (New Zealand Government, 2011), and the limited resourcing available for health intervention and promotion (World Health Organisation, 1995), it is hard to present this argument to governments that may only be in power for three years and want an immediate impact for the investment.

Three school-based randomised trials for obesity prevention have been carried out in New Zealand. The first trial, Living 4 Life, was conducted in six South Auckland low decile high schools as a part of the Pacific Obesity Prevention in Communities project to reduce the prevalence of obesity among Pacific Island adolescents (Utter et al., n.d.). The intervention which involved students 13 to 18 years of age aimed to improve dietary behaviours, increase physical activity and decrease television time through a youth-led, school-based intervention. This involved the intervention coordinator inviting students to champion the Living 4 Life program at school and involving them in the design and implementation of the programme. Student data were collected at baseline (n= 1634) and at the end of the three year intervention (n= 1612). Endpoint

analysis of the three year intervention showed no significant differences in anthropometric measures or behaviour change between the intervention and control schools. One control school showed improvements. Reasons for the mixed effects were attributed to the intervention's lack of intensity and the difficulty associated with modifying adolescent eating patterns.

The second trial, A Pilot Programme for Lifestyle and Exercise, (APPLE), was a two year school-based community intervention programme undertaken in decile 3-7 schools in rural Central Otago (Taylor et al., 2006a). The programme used community based activity co-ordinators to increase participation in physical activity and slow down unhealthy weight gain in primary school-aged children. A two year follow-up study showed that the body mass index (BMI) benefits had remained in the intervention group of children (Taylor et al., 2006b). Reasons for the on-going success of the programme were attributed to school and community involvement, government initiatives to support healthy eating and physical activity changes and an intervention which targeted young children rather than adolescent children. Specific enablers reported were discontinuation of school barbeques, cultivation and consumption of food from edible gardens, the removal of fried and takeaway foods from school lunch menus, and parental involvement in sports and activities. While the outcomes of the intervention were positive, the generalisability of the findings to the New Zealand population was limited because the intervention took place in a rural population of predominantly middle class New Zealand European children with only 17.0% Māori representation, and the cost of the intervention was also high (Mernagh et al., 2010).

In light of deteriorating child health statistics, especially for Māori and Pacific people (Ministry of Health, 2003), it was recommended that a health intervention programme targeting at risk populations be considered (Ministry of Health, 2002a, 2004a).

The third trial, Project Energize, was a randomised control trial involving 62 intervention and 62 control schools funded by the Waikato District Health Board. The intervention programme was contracted to Sport Waikato who trained a team of Energizers to work with the schools to promote physical activity and improved nutrition. The 2006 evaluation report (Graham, Reed, Ayers, & Amey, 2008) included anthropometric measurements of children made in 2004 and 2006, a household questionnaire, a school physical activity and nutrition stocktake, school leader telephone

interviews, and teacher and Energizer focus groups. The parents reported in the household questionnaires that low income was a barrier for families to provide healthy food choices (Graham, Reed, et al., 2008). The overall finding from the programme evaluation indicated that Project Energize needed to continue so that the gains made could be extended. Recommendations for improvement and development of the programme in 2006 included increasing the skilled support for schools, internal staff development as well as paying special attention to Māori and Pacific groups.

End-point analysis demonstrated that the intervention was associated with a reduced accumulation of body fat in younger children and a reduced rate of rise in systolic blood pressure in older children. (Elaine Rush et al., 2011). These favourable reports led to the Waikato District Health Board in 2007 to continue the contract with Sport Waikato and to include the control schools in the intervention. In 2008 the Board provided further funding so that the programme could be progressively rolled out to all Waikato primary, intermediate and area schools. Low decile schools were given first priority and finally in 2011, 244 schools involving 44,000 children and 1,796 teachers were enrolled in the programme. The next section describes in detail Project Energize in 2011.

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1.2   Project Energize: the intervention

The Waikato region is the fourth largest geographic area in New Zealand and has the second largest Māori population in New Zealand (Statistics New Zealand, 2006a). Annual income for Waikato residents is slightly less than the national average. The median income for Māori is $20,000 compared to the region's total median income of $24,000 and $24,500 for the entire country (Statistics New Zealand, 2006a). [Note, although the census is five years out of date, the data is the most recent available due to census delays because of the Christchurch earthquake]. As a population group, Māori have been reported to have poor health and score highest in the socio-economic deprivation indicators (Maori Health, 2006a, 2006b).

The intervention programme is funded by the Waikato District Health Board (WDHB) and is delivered by Sport Waikato, through on-the-ground staff called Energizers, who work with schools to improve the health of students by facilitating change within schools. The programme goals, centred on physical activity and nutrition, have not changed since 2004. All goals are explicitly aligned with the curriculum. Before the programme can start in a school the school signs a "contract" with Sport Waikato that clearly says what the school and the Energizers' responsibilities are and what can be expected. Each school appoints a lead teacher who is assigned the role of the liaison contact for the Energizer. The Energizer works with the liaison contact at the start of the academic year to update the needs assessment plan prepared at the time of enrolment into the programme. Updating the needs assessment plan involves reassessing the school needs and determining an action plan for the year. In all aspects of programme delivery, reducing inequality is a key consideration and focus (Graham, Appleton, et al., 2008) Priority is given to low decile schools as they are perceived to have higher programme needs (Graham, Appleton, et al., 2008).

The Energizers access national, regional and local initiatives and develop their own resources to improve children's physical activity and nutrition. All aspects of Energize are aligned with the curriculum. Each Energizer works with a geographic cluster of eight to twelve schools and adopts a facilitator's role, acting as an agent of change. It is the role of the Energizer to model skills, support and up-skill teachers and provide access to extra resources to enable teachers to continue with the programme. The

Energizer works with the school at the beginning of each year to develop an action plan, tailored to the individual needs and priorities of the school.

In order to better meet the specific needs of Māori and Pacific children, Sport Waikato subcontracts with four health providers (as appropriate), three Māori and one Pacific, for delivery of the programme. The ratio of Project Energizers to Māori and Pacific and low decile schools is higher recognising the greater need and time demands of those schools. Resources have been translated into Te Reo Māori, and in all but one of the Kura Kaupapa Māori schools, the Team Energize member is fluent in Māori. A degree of self-determination is allowed for Māori providers to modify and implement the programme to meet the specific needs of the school community. The Energizers' role reaches beyond schools as they are available to assist with a range of community healthy eating and physical activity initiatives, such as edible gardens and community sports events. The national Fruit-n-Schools programme also supports children from decile one and two schools by providing supplementary fruit on a daily basis.

The 2011 logic model for the programme outlining the links between activities, short and medium term outcomes and the long term outcomes of increased quality physical activity, improved nutrition and active, healthy school communities is presented in Figure 1 below. The logic model drives the three monthly reporting requirements to the Waikato District Health Board and the on-going evaluation of the programme.

TEAM ENERGIZE: HEALTHY, CONFIDENT KIDS
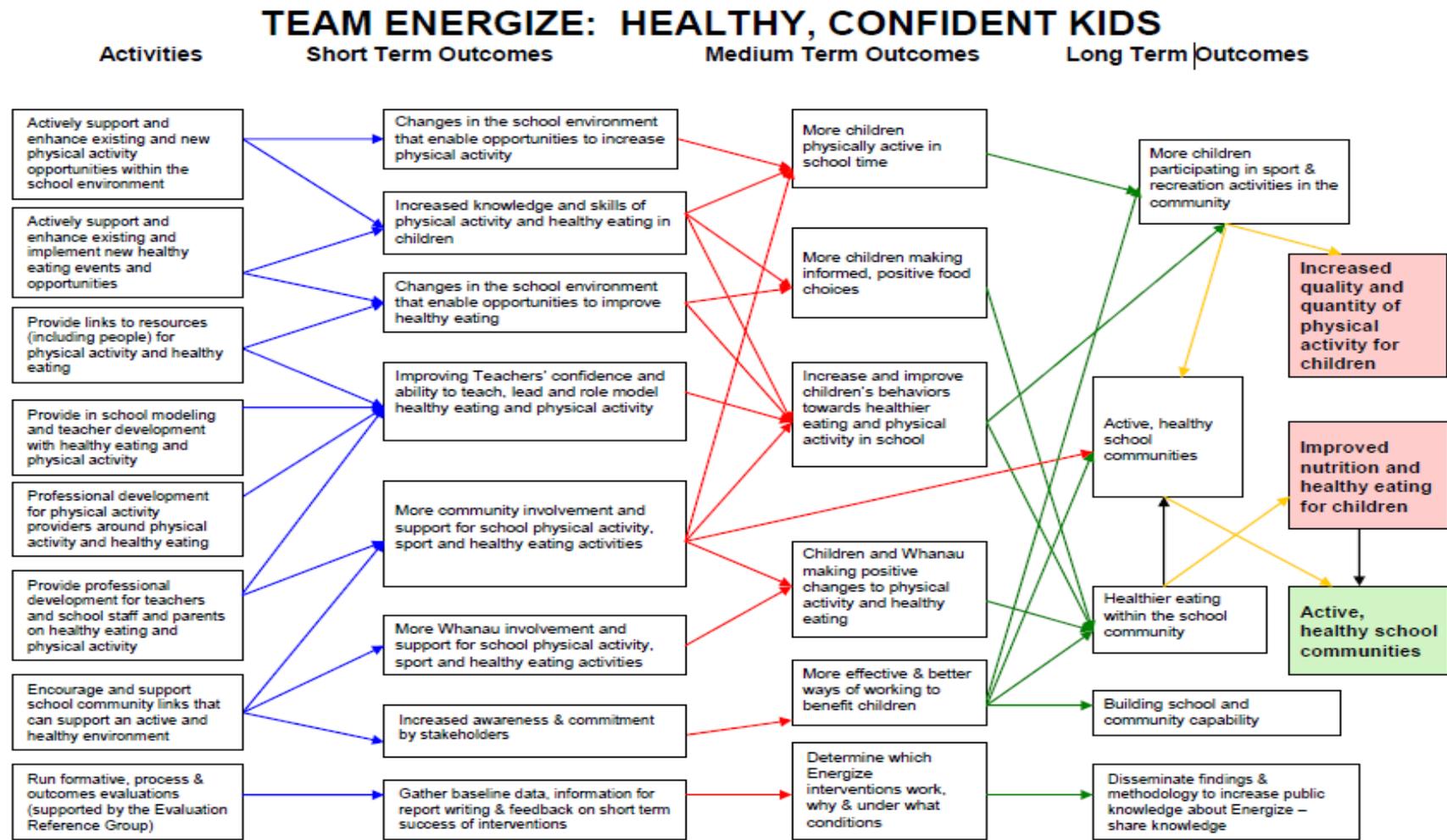
Figure 1: Team Energize programme logic model (Rush, Graham, McLennan, & Latimer, 2011). Used with permission.

The Energizers engage regularly in professional development, including on-going training. Monthly meetings allow the Energizers to meet and share their experiences with the ultimate aim of improving the programme (Sport Waikato & Auckland University of Technology, 2011). School holidays are spent preparing resources and up-skilling.

A second formal evaluation of the Energize programme occurred between 2008 and 2011. Process, audits and other research projects were undertaken as a part of this evaluation. In March/April 2011 anthropometric measurements of over 5000, 7 and 10 year old children, a household questionnaire and a school stocktake of physical activity and nutrition was planned (and subsequently completed). The measurements were as much as possible the same as those in 2004 and 2006.

In the planning for the 2011 measurements a concomitant need for face-to-face interviews with school leaders was identified. The programme evaluation reference group wanted to have a deeper understanding of how lead teachers perceived the programme. In particular the group wanted to understand how the schools perceived Energizer engagement and how effective the Energize programme was in meeting the programme goals.

1.3 Purpose of research

The purpose of this body of work was to identify factors associated with school engagement and participation in Project Energize, to examine the context of these factors, and determine changes that could be made to the programme to improve levels of engagement and participation.

The study provided an opportunity to find out from selected school leaders what worked well for Project Energize in their school communities, and identified what could be done differently to help them better achieve their programme goals.

This thesis asked "what are the in depth factors associated with levels of engagement and participation in Project Energize among participating schools and what could be done differently to help them better achieve their goals?"

1.4   Definition of engagement and its constructs

When responding to a question it is important that all concerned have a common understanding of the terms used. The term "engagement" as used throughout this thesis needed to be defined before the question could be examined further.

According to Merriam-Webster's Dictionary, to engage is "to take part [or] participate", "to begin and carry on an enterprise or activity", "to give attention to something", "to hold the attention of". Engagement is further defined as "the act of engaging [or] the state of being engaged involving commitment or a pledge". For the purpose of this study, engagement is defined as the act of schools participating in and committing to the vision and goals of Project Energize. Engagement involves deliberate effort and application by schools in order to achieve the Project Energize programme goals. Furthermore engagement needs to be measureable both qualitatively through the lived experience and also quantitatively by scales of perception and concrete actions so that participation and programme outcomes can be related to "effectiveness".

1.5   Rationale for this thesis

Due the increasing prevalence of overweight and obese New Zealand school children, in particular Māori and Pacific children, there are benefits to be gained from understanding why engagement levels vary amongst participating schools in the Project Energize programme. If engagement and participation are positively associated with programme effectiveness then these measures could be used to prioritise programme resources and to provide extra support to low engaged schools.

Despite the interest in school-based intervention programmes, no studies have dealt directly with the relationship between engagement and effectiveness in school-based interventions (Baskin, Zunker, Worley, Dial, & Kimbrough, 2009; Cargo, Grams, Ottoson, Ward, & Green, 2003; Franks et al., 2007; Singh, Chin A Paw, Brug, & van Mechelen, 2009). This gap has been identified as an area that requires investigation in order to maximise programme effectiveness for all schools (Davidson, 2007). The 2004-2006 Project Energize randomised controlled trial (RCT) included computer assisted telephone interviews with school leaders, however this information was limited in depth and insight.

This investigation differs from the 2006 Project Energize evaluation as it was conducted with face-to-face interviews with lead teachers to identify comprehensive information about engagement, participation and context. Factors identified as contributing to the relative success of participating schools could be used by the Project Director to modify or prioritise the programme to provide improved support for lower engaged schools.

1.6   Thesis structure

The thesis consists of six chapters. Following this introduction Chapter 2 reviews literature and research relevant to the research question asked. It considers from a variety of perspectives the factors that impact on engagement and effectiveness in the Project Energize programme. Gaps in previous research are identified and the research question is raised for investigation. A justification and description of the mixed method methodology adopted in the study is provided.

Chapter 3 describes the mixed method research instruments used. The semi-structured questionnaire of open and closed questions, the school stocktake questions and the Energizer ranking of schools by their perceptions of engagement are identified as well as an explanation of the data collection and analysis procedures used.

Chapter 4 presents the ratings of the school leader about aspects of the Energize programme derived from face-to-face interviews. Construct validity of the ranking of Energizers, the stock take and lead teachers is explored and factors associated with high and low engagement are analysed.

Chapter 5 outlines the key themes, identified by the researcher, from the recorded responses to the directed but open ended discussion during the face to face school leader interviews. The process of analysis is explained and justified.

Chapter 6 includes a detailed account and interpretation of the qualitative and quantitative findings of the study, with reference to the research questions and in relation to previous relevant research findings. Attention to the study's limitations, research implications and suggestions for programme modifications are made and conclusions are summarised.

Chapter 2 Literature Review

This chapter reviews literature and research about what is already known about the question "what factors are associated with engagement and participation of schools in the Project Energize programme and the circumstances under which these factors apply?"

The literature review includes an investigation of the reasons why Project Energize is needed and why the research question needs to be asked. Included is an investigation of the increasing prevalence of obesity in New Zealand including at risk populations and the factors contributing to its development. Consideration is given to health promotion principles, Māori concepts of health, and New Zealand government policies. This is followed by an examination of how schools can be effective partners in promoting health with particular focus on findings from school-based health interventions process evaluations and a review of what is known from other investigations. The final section justifies why mixed methodology may provide the required insights and understandings needed to answer the research question.

A literature search involved examining Ebsco, Scopus, Education Resources Information Centre (ERIC via Ovid) and AUT Summon databases using key search words *health promot*, school, obesity, process evaluat*, participat**, and *engag** was undertaken. Literature found was rich in the areas of barriers and enablers as part of process evaluations of school-based health interventions but the evidence was limited in the area of engagement and participation. A broader search of the peer reviewed literature using the search words school *climate, school partnership* and *institutionalization* identified reports that could be associated with engagement and participation in a school health intervention programme and these have been included to add breadth to the relevant literature and previous evidence.

2.1 The problem: increasing rates of overweight and obesity amongst children

Internationally there is convincing evidence that the prevalence of obesity is increasing (Ogden, Carroll, & Flegal, 2003) and New Zealand is no exception to this pandemic (Ministry of Health, 2005). The trend has both short and long term implications for student health and wellbeing. The first impact relates to how obesity can affect student participation, enjoyment of learning, academic achievement (Symons, Cinelli, James, &

Groff, 1997), and psychological wellbeing (Puhl, 2011), while the second impact relates to the development of non-communicable diseases, including cardiovascular disease and type 2 diabetes in adulthood (World Health Organisation, 2003). Not only do such non-communicable diseases threaten individual health but large sums of money are forecast to be spent on healthcare in response to them (World Economic Forum, 2011). The 2011 World Economic Forum forecast that the cost of treating non-communicable diseases in 2030 is to be more than US$30 trillion dollars representing 48% of global Gross Domestic Product (World Economic Forum & Harvard School of Public Health, 2011). In New Zealand in 1990 the cost of obesity attributed care was estimated to be NZ$135 million (Swinburn et al., 1997) and in 2010 updated the cost of obesity was estimated to be NZ$339 million (Swinburn et al., 1997).

Regional studies undertaken suggest the prevalence of obesity in New Zealand children and adolescents has increased from the late 1980s to the early 2000s. A study conducted in the Hawkes Bay region involving 871, 11 and 12 year old youths found that mean BMI, which is related to weight gain, increased by 9% from 1989 to 2000, with higher percentages reported for Māori and Pacific compared to New Zealand European children (Turnbull, Barry, Wickens, & Crane, 2004). A more recent study involving high school students from an economically deprived area of Auckland reported mean increases in BMI from 25.3% to 27.2% over a seven year period (Utter, Scragg, Denny, & Schaaf, 2009). This trend in weight gain is of concern since long-term overweight and obesity has been shown to follow into adulthood (Whitaker, Pepe, Wright, Seidel, & Dietz, 1998). The 2009 New Zealand Health Survey showed while 26.0% of the population were either overweight or obese, rates were greatest for Māori (37.7%) and Pacific children (54.7%) (Ministry of Health, 2009b). A New Zealand longitudinal, RCT study involving 5 and 10 year old children who had participated in the Project Energize intervention study, found that BMI and the percentage of body fat (% BF) scores in both 5 and 10 year old cohorts increased faster over two years in Māori children than in European children (Rush, Reed, et al., 2011) indicating a marked difference in growth patterns between Māori and European children. The reasons for this difference are complex, however the lower socio-economic status experienced by many Māori may play a significant role in the development of obesity (Zhang & Wang, 2004). The next section considers some of these socio-economic factors in greater detail.

2.2   Factors associated with obesity development

2.2.1   Deprivation

The prevalence of overweight and obesity in New Zealand is associated with social and economic deprivation (Ministry of Health, 2002b; University of Otago and Ministry of Health, 2011).

In New Zealand the index of deprivation (NZDep06) measures income, employment, communication, transport, support, qualifications, owned home and living space to derive a score for a small geographic area. The least deprived area is a DEP1 and the most deprived DEP 5 (White, Gunston, Salmond, Atkinson, & Crampton, 2008). The 2002/03 New Zealand Health Survey showed more than one quarter of New Zealanders living in the most deprived quintile 5 neighbourhoods, were obese, compared to less than 15% in the least deprived neighbourhoods (Ministry of Health, 2004c). The 2008/09 New Zealand Adult Nutrition Survey reported a continuation of this trend with the biggest differences being observed in women from deprived neighbourhoods (University of Otago and Ministry of Health, 2011).

Higher rates of obesity amongst the poor have been associated with a higher consumption of cheaper energy dense foods, and the inability to purchase expensive nutrient dense foods (Drewnowski, 2004; Foley et al., 2010). A New Zealand study aimed at identifying barriers to healthy nutrition in school children found financial cost was a barrier to having sufficient healthy food within a household (Walton, Signal, & Thomson, 2009). An earlier New Zealand study (Utter, Denny, et al., 2006) found that adolescent students from deprived areas cared just as much about healthy food intakes as students from more affluent areas, but students from deprived areas were more likely to consume unhealthy food than their more affluent peer group. Reasons cited for the consumption of unhealthy food included availability, affordability and marketing of unhealthy snack foods in economically deprived areas. A second New Zealand study (Utter, Scragg, Schaaf, & Fitzgerald, 2006) involving 389 secondary schools designed to investigate the relationship between socio-economic status and eating behaviours, found that Māori and Pacific children were more likely to skip meals than New Zealand European and Other children (NZEO), and to buy most of the food they consumed at school from the school tuck-shop or dairy. NZEO children in comparison were more likely to bring their food only from home. Higher intakes of fatty sugary foods amongst

Pacific and Māori children were reported. Recommendations to improve access to healthy affordable foods including breakfast were strategies suggested to reduce food insecurity and benefit Māori and Pacific children. An Auckland study (Teevale, Thomas, Scragg, Faeamani, & Nosa, 2010) designed to explore the socio-cultural factors associated with obesity development in Pacific Island communities found that healthy eating and increased physical activity in high school students was associated with having a parental presence at home, parental occupation and better health education and knowledge. The study which involved 782 obese and 834 healthy secondary students found that obese adolescents held the same attitudes, beliefs and values about food and physical activity as their healthy-weight counterparts, but these factors were not protective for obesity-risk. Socio-economic circumstance, rather than cultural beliefs, was identified as the most significant factor to determine healthy eating and physical activity behaviours in this study. An Auckland study (Duncan, Schofield, & Duncan, 2007) supported these findings that low socio-economic status is a barrier to participation in organised physical activity. This study reported there was a greater reduction in physical activity levels during the weekends amongst children from low socio-economic areas than children from high socio-economic areas (Duncan, Schofield, & Duncan, 2006). This was attributed to children from more privileged backgrounds been given greater opportunities to be involved in organised sport during weekends in comparison to children from poorer backgrounds who were free to use time in an unstructured manner.

Socio-economic status has been shown to impact healthy eating and physical activity behaviours. Food insecurity, a significant barrier to making healthy food choices will be investigated further.

2.2.2   Food security

Food security is described as the ability to access nutritionally adequate safe food that is socially and culturally acceptable (Radimer, 2002). Food insecurity is associated with anxiety and stress (K. Carter, Kruse, Blakely, & Collings, 2011; Ministry of Health, 1999; Radimer, 2002). Food insecurity is associated with adults reducing the size of meals, skipping meals or even going without food for one or more days in order to try to cope with hunger (Klein, 1996). Factors associated with food insecurity are low income and social deprivation (Klein, 1996). The 1997 New Zealand Adult Nutrition Survey found that 13.0% of households stated that they could only sometimes afford to eat

properly, while 14.0% reported that food ran out in the household because of money (Ministry of Health, 1999; Principal, 2011). As the global recession of 2009 has continued, unemployment rates and living costs have risen in New Zealand (New Zealand Government- Department of Labour, 2011; Statistics New Zealand, 2011), magnifying food security issues in low income families. The 2008/09 New Zealand Adult Nutrition Survey, (University of Otago and Ministry of Health, 2011) which reported food security for both males and females, showed that the proportion of households indicating low food security increased for males (1.6% to 5.6%) and females (3.8% to 8.8%) between the 1997 and 2008/2009 surveys and that those living in NZDep2006 quintile 5 neighbourhoods experienced higher levels of food insecurity than those living in less deprived neighbourhoods. The 2008/09 survey reported that food security was more of an issue for Māori people, with 74% of Māori males and 66% of Māori females, in comparison to 90% New Zealand European & others males and 89% New Zealand European & others females, reporting they could always afford to eat properly. These results are congruent with the findings of The New Zealand Poverty Measurement Project (Waldegrave, Stephens, & King, 2003), which did extensive work to analyse the incidence and severity of poverty in New Zealand and found that Māori and Pacific people were significantly more at risk of poverty than New Zealand Europeans.

Another score used to categorise areas of need is the ranking of schools. The decile score indicates the extent to which a school draws its students from low socio-economic communities, where decile 1 is the most deprived and decile 10 the least deprived (White et al., 2008). Food insecurity has been observed in a number of low decile 1 and 2 schools throughout the country (Child Poverty Action Group, 2011). Since the early 2000's it has become apparent that more children have been arriving at school without breakfast, triggering the implementation of privately funded or sponsored school food programmes (Child Poverty Action Group, 2011). Despite the sponsored school-based food programmes, a 2010 phone survey of 17 randomly selected decile 1 and 2 schools in the Auckland region found that food security was an issue for students. Two issues were raised. The first was a lack of food, and the second was the poor quality of the food being consumed by many children at school. These findings prompted the Child Poverty Action Group to lobby the New Zealand government to provide regular funding for breakfast programmes (Child Poverty Action Group, 2011). It has been shown

(Symons et al., 1997) that children who are hungry and undernourished tend to be irritable, apathetic and physically inactive, and these factors have a negative impact on classroom behaviour and academic learning. Students participating in school breakfast and lunch programmes experience improved rates of attendance, greater participation in the classroom and improved academic achievement (Murphy et al., 1998). Currently there is little public willingness to deal directly with the issue of hungry New Zealand children with much discussion focusing on the inability of parents to provide for their children, rather than considering the social and economic factors underpinning the situation (Anscombe, 2009). This stereotypical blaming attitude was demonstrated by Prime Minister John Key, who said beneficiaries who used food banks made poor choices (Trevett, 2011, Feburary 17), implying that beneficiaries who used food banks were frivolous and careless. To the contrary, a report by The New Zealand Network against Food Poverty stated that

"people on low incomes were more careful shoppers than any other income group, but they may have more difficulty getting their food at the lowest price, because of lack of transport, storage or money" (p.13), and that "spending on food was one of the few areas where families could cut back to meet other needs" (p. 11) (Else & New Zealand Network Against Food Poverty, 1999).

It has been shown that income and socio-economic status are indicators of health, with an adequate income needed to access healthy nutritious food, medical care, transportation and educational opportunities (Marmot & Wilkinson, 2006).

The question needs to be asked, whose responsibility is it to provide for the needs of hungry school children? Some people would argue that food security issues are a societal problem, and that the most effective way to address national food security issues is to develop national food and nutrition policies focused on reducing disparities and inequalities between people (Roberston, Brunner, & Sheiham, 2006; Wilkinson & Pickett, 2009) rather than relying on band-aid measures that are subject to funding provider priority changes (Child Poverty Action Group, 2011). Other groups in comparison feel food insecurity is a parental responsibility that needs to be managed by families. Several minor New Zealand political parties specifically targeted unemployment and poverty in the 2011 general election in recognition of higher

unemployment and poverty amongst Māori (Green Party of New Zealand, 2011; Mana Party, 2011; Maori Party, 2008).

2.2.3 Cultural eating and physical activity patterns

Cultural differences have been observed in physical activity levels and dietary patterns for Māori, Pacific and New Zealand European/Others. The 2008 National Survey of children and Young People's Physical Activity and Dietary Behaviours in New Zealand (Ministry of Health, 2010) found a higher percentage of Māori (74.1%) and Pacific (78.8%) meet the daily guidelines for physical activity than NZEO (66.7%). The study also showed that physical activity levels tapered off markedly with age, with only 15% of all young people aged 20 to 24 years meeting the guidelines, suggesting there is a cultural shift from physical activity in youth to adulthood.

Cultural factors have been shown to influence Māori and Pacific eating patterns with food playing an integral part in both cultures (Bawden, 1999; Mavoa & McCabe, 2008). For Māori, the marae is the heart of community life and the place where important functions such as tangi (funerals), weddings and twenty-first birthdays are celebrated. Food forms a very important part of the marae gathering with hospitality being highly valued (Bawden, 1999). Bawden (1999) describes the importance of food on the marae as follows, "Food cements a welcome, and expresses aroha, love, and concern. It is courteous to accept what is offered" (p. 16). To decline offered food could be seen as offensive and disrespectful.

Food is generally viewed by Pacific people as something to enjoy (Bawden, 1999) and forms an important part of major social occasions in Samoan (Moata'ane, n.d.) and Tongan communities (Mavoa & McCabe, 2008). Being able to provide traditional cuisine and partake generously in its consumption is perceived to be more important for Samoan people than considering the health value of food (Bell, Amosa, & Swinburn, 1997).

Māori and Pacific eating patterns differ from New Zealand European eating patterns (Metcalf et al., 2008). In Māori society, meat, fat and sugar form an important part of the diet, with fruit being seen as a luxury item and vegetables being consumed in smaller quantities. Foods such as rewena bread, sea-food, eels, puha and watercress are highly regarded and form an important part of marae cuisine. Preferred cooking

methods are frying or boiling (Pihema, 1989; Rush , Hsi, Ferguson, Hinepo Williams, & Simmons, 2010). Due to the ready availability of meat in today's society, current boil ups may contain up to 65% of total energy from fat, the greater amount coming from saturated fat (Rush et al., 2010). Such energy dense foods are associated with weight gain and increase the risk of type 2 diabetes and coronary heart disease (Mann, 2002).

Long-term concern has been expressed about the poorer health of Māori (Murchie, 1984). Murchie in her report of Māori women's health for the Māori Women's Welfare League, stated "The League should have as one long-term aim the elimination of current disparities between Māori and non -Māori statistics so that all New Zealanders have life expectancies that do not differ between ethnic groups" (p. 85).

This view was reinforced by Pomare and de Boer (1988) in their review of Māori health.

> Māori people are grossly disadvantaged socially, economically and culturally, as evidenced by their high levels of unemployment, low earning capacity, poorer educational attainment, low income ownership, over representation in penal institutions and high rates of physical and mental ill health. (p. 42)

> If Māori standards of health are to be improved in any substantial way in the short term, then jobs are required and access to health care improved (p.163).

Efforts to reduce inequality and improve health outcomes for Māori should centre on health promotion models that are meaningful and effective for Māori and follow the appropriate research guidelines (Health Research Council, 2010; Health Research Council of New Zealand, n.d.). The Project Energize health promotion model recognises that disparities do exist between rich and poor, and consequently the programme is focused on reducing inequality and improving health outcomes for all children.

2.2.4   The obesity-promoting environment

A report to the Health Select Committee of Inquiry into Obesity and Type Two Diabetes in New Zealand by 'Fight the Obesity Epidemic New Zealand Incorporated' in 2006 found that New Zealanders, particularly children, live in an obesity-producing environment (Fight the Obesity Epidemic, 2006). This report focused on the increasing

consumption of energy-dense, highly processed foods and in particular fast foods, the increased consumption of soft drinks, the availability and relative price of less healthy foods, the increased promotion and marketing of food directed at children, reduced physical activity and increased sedentary behaviour, and changes in family lifestyles as major contributors to the obesity-promoting environment. As a result of this report policy recommendations were made. These included having strong regulatory controls on food marketing and sponsorship directed at children, a government-funded nationally coordinated communications strategy for healthy eating, and pricing controls to help make healthy choices the cheaper choices e.g. via a tax on saturated fat or free sugars, or the discounting of healthy choices such as fruit and vegetables (Wilson, Watts, Signal, & Thomson, 2006).

The next section explains the health promotion principles that need to be considered when developing and implementing health intervention programmes in order to enhance the wellbeing of a community.

2.3 The solution – A multi-pronged approach

2.3.1 Health promotion principles

Health is defined as a state of complete physical, mental, emotional and social well-being, not merely the absence of disease or ill-health. (World Health Organisation, 2006). Health promotion is defined by the Ottawa Charter (World Health Organisation, 1986) as the process of assisting people to increase control over, and to enhance their health and wellbeing. Key actions recommended by the Charter for health promotion include building public health policy, creating supportive environments, strengthening community action, developing personal skills, and reorienting health services (World Health Organisation, 1986). Prior to the signing of the Ottawa Charter, wellbeing was seen as the responsibility of the individual and a product of their actions alone. This view has been replaced with the notion that health and wellbeing is the product of cultural and societal influence and as a consequence require a societal response (1986). These health promotion principles have formed the backbone of the Health promoting Schools concept (St. Leger, 1999) and the Project Energize model where priority has been given to reduce the obesogenic school food environment, provide physical activity and nutrition support for teachers, improve food security for children, up-skill parents and caregivers and strengthen community relationships.

2.3.2   Health promotion models

The Ottawa Charter has underpinned the development of three health promotion models each with their own view point and value: the Life Course Model; the Precede-Proceed model; and the EUHPID Health model (Best et al., 2003). The Life Course Development Model is built on the notion that health is a consequence of genetics, biology, behaviour, and social and economic context, all of which change as a person develops, impacting health either positively or negatively (Halfon & Hochstein, 2002). There is a growing consensus amongst scientists that the origins of adult disease are often found among developmental and biological disruptions occurring during the early stages of life and that there is a strong argument for interceding and attempting to prevent disadvantage in early life (Shonkoff, Boyce, & McEwen, 2009).

The Precede-Proceed model is comprised of two parts. The PRECEDE part stands for predisposing, reinforcing, and enabling constructs in educational/ environmental diagnosis and evaluation, while the PROCEED part stands for policy, regulatory, and organizational constructs in educational and environmental development. The model provides a framework for health promotion action (L. Green & Kreuter, 2005).

The EUHPID Health model recognises the three dimensions of health (physical, mental and social), as well as individual and environmental determinants of health that are considered from either pathogenic or salutogenic perspectives. The model focuses on supporting and developing healthy communities (i.e. health promotion) but recognises there is still a place for health care and protection (Bauer, Davies, & Pelikan, 2006).

2.3.3   The social determinants of health

It is recognised in all the models outlined above that health and disease are dependent on social, environmental and behavioural factors, and that these factors should be taken into account when considering and developing policies for health promotion (Marmot & Wilkinson, 2006). Reducing social inequalities in order to improve health outcomes is a concept that has been promoted. This idea is based on the knowledge that even in the most affluent countries the people who are less well-off experience more illness, disease and reduced life expectancy than people who are wealthy (Marmot & Wilkinson, 2006). Societies that develop and implement policies to reduce the gap between rich and poor have been shown to improve the health status of all in society (Wilkinson & Pickett, 2009). Reducing social inequality has been an important consideration of Project Energize (Graham, Reed, et al., 2008), with the programme giving priority to low decile

schools. A Finnish study (Lindström, Absetz, Hemiö, Peltomäki, & Peltonen, 2010) aimed at reducing the risk of type 2 diabetes using school-based physical activity and nutrition lifestyle interventions, identified social inequality as an area that needs further consideration.

2.3.4   Māori health concepts

It has already been shown that Māori are significantly over-represented in New Zealand obesity statistics. Given that, health promotion interventions must be meaningful to Māori and therefore it is important to have an understanding of Māori perspectives on health. The Māori concept of health (Hauora) aligns closely with the 1947 World Health Organisation definition of health (World Health Organisation, 2010) and is comprised of four parts with each part representing one of the four basic principles of life. There are spiritual, psychological, physical and family components, with each component blending to form an integrated and comprehensive model for health (Durie, 1985). Traditionally Māori and New Zealand European approaches to health differ, with Māori placing greater emphasis on community wellbeing rather than individual wellbeing (Durie, 1985).

The Treaty of Waitangi provided a framework for Māori health development. Fundamental to the treaty are the three principals of partnership, protection and participation which frame health practice delivery and policy development in New Zealand (Durie, 1989). In 1999, Te Pae Mahutonga, a model for Māori health promotion, was developed to conceptualise the task of creating a climate in which Māori potential could be realized. The health promotion model comprised six key elements: securing cultural identity; harmonising people with their environment; encouraging healthy lifestyles; increasing Māori participation in society; Māori leadership and Māori autonomy in determining and promoting health (Durie, 1999). A key focus of this model was the development of building trusting relationships that observe and respect Māori culture at all levels of the community, a focus considered critical in achieving health gains for Māori (Durie, 2004). Prominent Māori leaders have contributed insights into Māori beliefs and this has helped to increase Pākehā understanding of Māori health and wellbeing. Three concepts have been reported. First, tribal identity is recognised as an important factor in providing security, self-esteem, and good health (Murchie, 1984). Second, the laws of Tapu play an important part in Māori beliefs (Murchie, 1984). Third, the Māori view of socio-economic status differs

to that of the non-Māori (de Boer & Pomare, 1988). In Māori society high status is associated with having a strong cultural base and an extensive family (whānau), subtribal (hapū) and tribal (iwi) support network rather than accumulated personal wealth (de Boer & Pomare, 1988). These insights have contributed to the development of a stronger Māori health model that promotes scientific knowledge and Māori cultural understandings (Durie, 2004; Durie, Cooper, Grennell, Snively, & Tuaine, 2010).

2.3.5   Government policies and health promotion

In recognition of health inequalities for Māori, in 2002 the Ministry of Health launched He Korowai Oranga: Māori Health, a strategy to provide strong direction for Māori health development (Ministry of Health, 2002a). The overall aim of He Korowai Oranga was whānau-ora, an initiative to support Māori families to achieve maximum health and wellbeing. The strategy provided a framework for the public sector to take responsibility for supporting the health status of whānau. Whānau is recognised as the backbone of Māori society and the principal source of strength and support in the promotion of Māori health and wellbeing (Ministry of Health, 2004a). In 2003 the Ministry of Health launched the Healthy Eating-Healthy Action: OrangaKai-OrangaPumau strategy as a framework to improve nutrition, increase physical activity and reduce obesity for all New Zealanders (Ministry of Health, 2004b). The Healthy Eating-Healthy Action (HEHA) framework included a wide range of initiatives within schools, early childhood education services, workplaces and communities (Ministry of Health, 2004b). One of its key initiatives was the launch in 2006 of Mission On, a broad-based strategy targeting young New Zealanders and their families (Minister of Health, 2006.). The initiatives were aimed at creating healthier school or learning environments by introducing nutrition guidelines, developing a food and beverage classification system and by encouraging schools to develop nutrition policies through changes to the National Administration Guidelines.

In 2010 the New Zealand government released the Whānau-Ora: Whānau-centred initiative. The whānau-centred health model focused on a range of initiatives within schools, early childhood education services, workplaces and communities with a strong emphasis on strengthening whānau-capabilities and developing collaborative relationships in order to improve Māori wellbeing (Durie et al., 2010).

2.3.6 Changes in policy

With a change in New Zealand central government in 2008, modifications were made to school-based nutrition initiatives. The first major change involved the removal of the clause in the National Administration Guidelines 5 (NAG 5) which had required boards of trustees to sell only healthy food and drink options in schools (Ministry of Education, 2010a). The second change came with the deletion of the Nutrition Fund which had been instrumental in helping many schools develop edible gardens, build school kitchens and introduce healthy lifestyle initiatives in schools (Otago District Health Board, 2009; Waikato District Health Board, 2011).

The removal of the 2008 NAG 5 clause was seen by many health and education professionals as a move that was likely to negatively impact health of New Zealand children, especially New Zealand's most vulnerable children, namely Māori and Pacific (Utter, Scragg, Percival, & Beaglehole, 2009). Many pre-schools and schools had made improvements to their school food environment as a result of NAG 5 (Canterbury District Health Board, 2009; Waikato District Health Board, 2009) and pre-schools and schools had benefited from the Nutrition Fund (Otago District Health Board, 2009). The removal of these policies resulted in expressions of frustration from physicians (Fitzsimmons, 2011), health professionals (Science Media Centre-Blog, 2010; Scoop Health, 2009) and academics (Utter, Scragg, Percival, et al., 2009) who have been committed to improving the health of young New Zealanders.

Given that obesity and associated diseases threaten individual health and increase the amount spent on public healthcare, governments worldwide have been encouraged to develop strategies and policies to control non-communicable diseases (United Nations, 2011; World Health Organisation, 1995, 2010). These strategies have included the development and implementation of school-based health interventions.

2.4 The role of schools in promoting health

Schools have been identified as an ideal environment for effective intervention because they offer continuous intensive contact with children and reach a range of families of different ethnicities and socio economic backgrounds (St. Leger, 1999). Research has shown that efforts focussed on improving the health outcomes of children and the environment in which they learn improves student achievement outcomes (World Health Organisation, 1995).

Results of school-based health programmes have varied (Brown & Summerbell, 2009) however a review of 217 nutrition intervention studies concluded that educational approaches directed at behaviour and action rather than solely knowledge were more likely to be effective in facilitating dietary change (Contento, 2008). Seven long-term, school-based physical activity and nutrition education programmes similar to Project Energize have been identified. One of the programmes used volunteer "Health Promotion Agents" to implement the programme (Giralt et al., 2011), while two programmes used classroom teachers and physical instructors to implement the programme (Gortmaker et al., 1999; Hatzis, Papandreou, & Kafatos, 2005; Project Fit America, 2011). Another programme used classroom teachers with the assistance of a nutritionist (Danielzik, Pust, & Müller, 2007). Two programmes delivered the campaign messages using comic characters, stickers and cooking classes (Burke et al., 1998; United States Department of Agriculture, 2011). Outcome measures assessed varied from having no evaluation, (United States Department of Agriculture, 2011) to measuring BMI and fitness (Project Fit America, 2011) to measuring height, weight, waist, BMI, physical activity and nutrition (Giralt et al., 2011) to measuring all anthropometric and biochemical indicators of health and wellbeing (Danielzik, Pust, Landsberg, & Müller, 2005). Programme evaluations were completed for six of the seven studies. Long-term intervention improvements were sustained in five of the six programmes (Burke et al., 1998; Giralt et al., 2011; Gortmaker et al., 1999; Hatzis et al., 2005; Luepker et al., 1996) while limited success was seen in one study (Danielzik et al., 2005; Danielzik et al., 2007).

Differences in study design, programme delivery, student outcome measures, and programme length have prompted researchers to carefully reconsider what methodological approaches to use in health promotion evaluation (J. Green & Tones, 1999).

2.4.1   Process evaluation – the opportunity to evaluate

Comprehensive process evaluation is recommended for all new intervention programmes and provides clear documentation of what works, what does not work and under what circumstances programmes are successful or not (Hawe, Degeling, & Hall, 2007). Evaluation involves measuring the activities of the programme, its quality and programme reach, including participant satisfaction with the programme (Hawe et al., 2007). A well planned process evaluation can provide information that will identify and

assist with problem solving (Gittelsohn, Merkle, Mary, et al., 2003; Schneider et al., 2009) as well as offering an understanding about programme implementation (C. C. Johnson, Lai, Rice, Rose, & Webber, 2010; Parcel et al., 2003) and programme outcomes (Parcel et al., 2003). Process evaluations have highlighted a range of barriers and enablers to implementing school-based health programmes. Other barriers reported include a lack of school administration support for the programme, a high turnover in administration, and a lack of communication among staff, and administration resulting in the presence of strong leadership to sustain and direct the programme. Enablers to implementation reported have included having a school staff member with academic training in health education to provide knowledge and expertise, having supportive school administrators, teachers, and parents to reinforce the programme messages; maintaining positive relationships between implementation staff and students to ensure that students remain positive and engaged; having a nominated school leader responsible for programme implementation and success; an engaged multidisciplinary team who can support programme implementation; availability of detailed resources; training; hiring regional coordinators to assist with implementation; allowing schools flexibility in implementation, and embedding the intervention in local/national school health policy (Baskin et al., 2009; Gittelsohn, Merkle, Mary, et al., 2003; Greaney et al., 2007; Rowe, Stewart, & Somerset, 2010; Singh et al., 2009). Process evaluation has also highlighted the importance of engaging school stakeholders in planning and programme discussions in order to maximise stakeholder buy-in (Della Torre, Akre, & Suris, 2010), as well as empowering communities to work with professionals to develop workable solutions (Wallerstein & Bernstein, 1994).

2.4.2   Process evaluations conducted in low income ethnic minority communities

School health intervention programmes conducted in low income ethnic minority communities have highlighted specific barriers and enablers. Barriers identified include teacher variation in the number of lessons taught, a lack of time in an already over-crowded curriculum, conflict for teachers in enforcing the nutrition policy especially when food security is a concern, a lack of consistency for the programme (for example, schools selling unhealthy food), other school priorities, perceived lack of resources, a lack of translated curriculum material, a lack of health knowledge (Cargo, Salsberg, Delormier, Desrosiers, & Macaulay, 2006) as well as a perceived lack of parental support (Spoth, Redmond, Hockaday, & Shin, 1996). A lack of parental support is

attributed to work demands, scheduling issues, logistic requirements such as transport and child minding (Baskin et al., 2009; Mendez, Carpenter, Cohen, & LaForett, 2009), family member influences, psychological distress, as well as a perceived lack of need (Mendez et al., 2009; Spoth et al., 1996).

Enablers identified include teacher recognition of their responsibility for the health and wellbeing of future generations (Cargo et al., 2006), family focused events, cooking demonstrations and taste-testing (Rosecrans et al., 2008), professional development for staff (Gittelsohn, Merkle, Mary, et al., 2003), community partnerships (Baskin et al., 2009), providing families with plenty of lead in time to attend meetings, offering a range of strategies to engage parents (Mendez et al., 2009), and empowering indigenous communities to become involved in the conceptualising, planning and implementation of culturally specific programmes (Hurst & Nader, 2006; Tsey et al., 2010).

In conclusion, process evaluation of health intervention programmes provides the opportunity to improve programme implementation and effectiveness so that the best possible outcomes can be delivered to improve student health. The 2011 Project Energize evaluation provided the opportunity to evaluate the on-going success of the programme, however decisions had to be made as to what would be the most effective measure of gauging engagement and participation in the programme.

2.4.3   Frameworks to assess effectiveness of health interventions

Institutionalization is the process of making a health intervention programme an integral part of school culture, so that the programme continues to sustain itself after programme funding lapses (Parcel et al., 2003). During this process, cultural change becomes embedded, and behavioural change established. Institutionalization has been shown to occur when the health promotion programme is incorporated in the school's mission statement and provided for in the operational budget (Goodman, McLeroy, Steckler, & Hoyle, 1993) as well as being embedded in the curriculum frameworks (Rowe et al., 2010). Institutionalization is considered an important factor in low income minority populations where extra time is sometimes needed for cultural and social programme adjustments (Goodman & Steckler, 1989). Factors considered important in achieving institutionalization include school climate, school connectedness and school-community partnerships.

The degree to which a programme becomes institutionalized can be determined by asking relevant questions. One such questionnaire for measuring the level of institutionalization of health promotion programmes was trialled and tested by 453 administrators in 141 organisations in North Carolina (Goodman et al., 1993). The results of the eight factors model showed that the four routinization factors (activities become routine, funding renewed annually, programme part of annual planning) were more highly correlated with longevity of programme and the four saturation factors (programme has optimum staffing, and reaches maximum number of clients that it can sustain, optimum stable funding) were more highly correlated with the managers' perception of the programme's permanence. Enablers to institutionalization identified include having a health professional as the first source of information, the presence of a programme champion, perceived source of stable funding, increased number of years in programme, effective administrative leadership (Rowe et al., 2010; Scheirer, 1990) and health department support (Rowe et al., 2010). Barriers to institutionalization include a loss of the original co-ordinator to the programme, insufficient administrative leadership (Scheirer, 1990), changes in school priorities and loss of the programme champion (Smith, Redican, & Olsen, 1992).

School climate refers to school's physical and psycho-social structures and has been identified as a factor important in determining institutionalization and sustainability of a school health programme (Parcel et al., 2003). School climate is influenced by staff morale, leadership, staff stability, administrative support, and appropriate financial and human resourcing (Gittelsohn, Merkle, Mary, et al., 2003). A positive school climate has been shown to favourably influence staff members' behaviours and their willingness to try new health innovations and their ability to cope with challenges that arise during implementation (Gittelsohn, Merkle, Mary, et al., 2003). Leadership style is associated with school climate. Principals perceived to be open and supportive have been shown to inspire staff to teach more programme lessons, try new curricula, and engage in training more than principals who were perceived to be closed or disengaged (Parcel et al., 2003).

School connectedness is the cohesiveness between students, families, school staff, health and community representatives and has been promoted as a critical element in the sustainability of school-wide health intervention programmes (Rowe & Stewart, 2011). School connectedness is promoted by organising community events that are social,

celebratory, involve food or events with communal eating and do not incur a financial cost to participants. Allowing sufficient time for relationships to develop and adopting a school wide approach to relationship building aide school connectedness.

School-community partnerships have been shown to enhance institutionalisation or sustainability of school-wide health intervention programmes (Laurence, Peterken, & Burns, 2007). Factors found to be effective include a focus on building relationships between school and community partners, complementary capacities of school personnel and service providers, shared goals between both parties, and service provider competence (M. Thomas, Rowe, & Harris, 2010).

Five frameworks for assisting with obesity prevention programming and evaluation will be presented in the next section.

2.4.4 What questions need to be asked to evaluate the effectiveness of obesity prevention programmes

It has been reported that broader measures of programme success in addition to anthropometric measures can be used when evaluating school-based health intervention programmes (J. Green & Tones, 1999; St. Leger, 1999). Five frameworks for aiding programme planning and subsequent evaluation have been identified.

The first framework, known as Analysis Grid for Environments Linked to Obesity framework (ANGELO) was developed to understand the modern day obesogenic environment and to prioritise settings for intervention (Swinburn, Egger, & Raza, 1999). The framework identifies the physical, economic, policy and sociocultural elements that influence food intake and physical activity as well as the barriers and enablers to implementing the obesity intervention programme (Swinburn et al., 1999). The framework has been used successfully in Fiji, Tonga, New Zealand and Australia in consultation with communities to develop obesity prevention plans that are responsive to the cultural needs of subject communities (Simmons et al., 2009).

The second framework is The RE AIM framework model developed to evaluate public health interventions. The framework assesses programme reach, efficacy or programme success rates, outcomes measures, adoption or percentage of the population that has adopted the intervention, implementation and maintenance of health intervention programmes (Glasgow, Vogt, & Boles, 1999). This comprehensive framework assesses

what works in health promotion and to what degree and under which circumstances. Studies have shown that what works well in one setting may not be effective in another (Glasgow et al., 1999).

The third framework is a tool comprised of a set of scales designed to assess a community's capacity to address community health issues. This tool covers nine domains using 26 items, each with a four point scale. The tool measures levels of participation, leadership capability, community relationships, community engagement and participation in problem solving and uses a combination of quantitative and qualitative assessment methods (Maclellan-Wright et al., 2007). The Healthy Alberta Communities Project, a community obesity prevention programme, used this tool in conjunction with the ANGELO framework to determine the main factors contributing to programme effectiveness. The findings of this study showed that the development of collaborative community relationships was the most important factor in building community capacity. Collaborative relationships influenced the level of human and financial programme resourcing and enabled broader policy issues to be addressed, such as the need for adequate income support to promote food security (Raine et al., 2010).

The fourth framework shows the Stages of Change (Prochaska, DiClemente, & Norcross, 1992). The model consists of six stages: pre-contemplation, contemplation, preparation, action, maintenance, and termination with each stage describing a set of behaviours needed to move from one stage to the next. Although initially used to explain how a person can successfully overcome an addictive behaviour, this model has been used to show the stages of change associated with individuals and groups implementing physical activity and healthy eating programmes (Sigman-Grant, 1996). Knowing the stage of change for an individual or group can assist with the development of targeted intervention strategies and programme modifications (Glanz et al., 1994; Horwath, 1999; Mauriello et al., 2006; Sigman-Grant, 1996). For example, the evaluation of a school based health promotion programme showed that the level of school readiness influenced the ease with which the programme facilitators gained acceptance within the school (MacDonald & Green, 2001). School readiness has been shown to be associated with recognising the need, gaining teacher and administration support for the programme and having a philosophical fit between the school and programme ethos. Barriers to school readiness have been identified as schools not

viewing health as a school responsibility, or being concerned about a negative community reaction. (MacDonald & Green, 2001).

The fifth framework identified was a prediction model designed to predict the adoption of the Quebec Healthy Schools programme by 96 provincial schools (Deschesnes, Trudeau, & Kebe, 2010) The prediction model comprised three sections: 1) adopter characteristics (school's belief about their ability to accomplish tasks related to the intervention), 2) perceived attributes of the programme (benefits and advantages of programme) and 3) organizational context. Adoption of the Healthy Schools programme in Quebec was associated strongly with school leadership, perceived school contextual barriers, school commitment and investment in healthy lifestyles, and a school-wide belief that health issues could be addressed by collective effort (Deschesnes et al., 2010).

Leadership will be considered in more detail in the next section.

2.4.5   Why question leaders?

Research has shown that leadership is strongly related to the overall condition of a school (K. Leithwood & Jantzi, 1999) and school effectiveness (Hallinger, 2003; Hallinger & Heck, 1996). One dimension that Hallinger and Heck (1996) examined that Leithwood and Jantzi (1999) did not was the impact of environmental variables and personal principal characteristics on leadership. Their study considered variables such as community type, school size, student socio-economic status, and found that socio-economic status influenced leadership style (Hallinger & Heck, 1996).

Over recent decades, transformational leadership theory has developed as a leadership model to promote team effectiveness and organizational learning (Yukl, 2008). Based on the conceptualization of leadership behaviours derived from Burns (1978) and elaborated by Bass (1985) (as cited in Rafferty and Griffin, 2004), transformational leadership involves motivating followers to try something new or to achieve higher performance than initially expected by converting individual perspectives, beliefs and values (Rafferty & Griffin, 2004). Transformational leaders are visionaries who encourage their staff to look beyond themselves and their own interest for the sake of the greater good (Yukl, 2008). Transformational leadership involves promoting a shared vision, using inspiring and motivating communication techniques, providing supportive leadership including staff development, empowering staff to problem-solve in new and

innovative ways, leading by example, and acknowledging effort for achievement of specified goals (Carless, Wearing, & Mann, 2000; Rafferty & Griffin, 2004; Yukl, 2008). Careless, Wearing and Mann (2000) combined these behaviour traits to develop a Global Transformational Leadership (GTL) scale that could be used to measure transformational leadership (Carless et al., 2000). Transformational leadership has been shown to have been adopted successfully in both western and eastern cultures especially where people demonstrate strong loyalty and commitment to an organisation (Bass, Jung, & Sosik, 1995). Transformational leadership practices have been shown to contribute to the development of capacity and commitment within a school (Bath, 1990; Fullan, 2001; K. Leithwood & Jantzi, 1999) with more studies (Hallinger, 2011; Kenneth Leithwood & Jantzi, 2005) suggesting a strong link between leadership, organizational change and improved organizational outcomes.

Another model of leadership, "instructional leadership" (Hallinger & Heck, 1996), places similar emphasis on beliefs, values, vision, goal setting and developing capacity for change (Hallinger, 2011) .

A review of process evaluation findings from a range of school-based health intervention programmes isolated leadership as a key factor in achieving programme success (Deschesnes et al., 2010; Gittelsohn, Merkle, Mary, et al., 2003; Parcel et al., 2003; Rowe & Stewart, 2011; Scheirer, 1990).

2.5 Putting it all together – how to assess

Mixed methods research, a combination of quantitative and qualitative data collection and analysis, has increased in popularity since Bryman (1988), Brewer and Hunter (1989), Greene, Caracelli, and Graham (1989) and Creswell (1994) first laid down the foundations for mixed methods design (Creswell & Plano Clark, 2007). Mixed methods are predominantly influenced by the post-positivist philosophical worldview and influences how researchers conduct and report their research (Creswell & Plano Clark, 2011). The post-positivist paradigm position recognises that it is possible to understand the research problem from multiple viewpoints, or realities and unlike the objective view of the positivist position, the post-positivist position maintains "reality is socially and culturally constructed" (Giddings & Grant, 2007). Based on these philosophical assumptions, the post-positivist paradigm freely integrates quantitative and qualitative research in order to "solve the research problem" (Giddings & Grant, 2007).

The decision to use mixed methods is ultimately governed by the research question and the methods best suited to answering it (Bryman, 2006). The advantage of the mixed methods approach is that it provides multiple sources of data to answer the research question while offsetting the limitations associated with only quantitative or qualitative research (Bryman, 2006). The triangulation of the data provides the opportunity to corroborate the findings and enhance the credibility of the results (Bryman, 2006).

Randomized control trials (RCT) have been considered the gold standard methodology for building a strong evidence base for the prevention of childhood obesity (Monsen & Cheney, 1988). Indeed, many of the reviews in this area have concentrated on this study design (Cook-Cottone et al., 2009; Sharma, 2007). However, in the light of mixed programme success (Brown & Summerbell, 2009), discussion has centred on whether the RCT alone is the best method to evaluate multifaceted health intervention programmes (Swinburn, Gill, & Kumanyika, 2005). Debate has focussed on whether it is appropriate to rely solely on epidemiological indicators, especially when health intervention programmes are focused on behavioural change and underpinned by health promotion principles (J. Green & Tones, 1999). While it is acknowledged that morbidity and mortality indicators provide justification for developing health intervention programmes, these indicators may not be the best for evaluating effect (J. Green & Tones, 1999). This is particularly true when the programme design fails to recognize programme success despite there being evidence of change or the devices being employed to assess change are not sufficiently sensitive to measure change within the specified timeframe (J. Green & Tones, 1999). The evidence base for obesity prevention needs to provide many forms of evidence, some of which need to include the informed opinions of stakeholders to ensure that the contextual relevance of the results are understood (Swinburn et al., 2005). This approach was reinforced in a literature review of process evaluation methods used in childhood obesity prevention programmes (Livingstone, McCaffrey, & Rennie, 2006). The research highlighted the depth that the mixed methods provides and its usefulness in providing evidence and understanding of best practice (Livingstone et al., 2006).

Mixed methods approaches have been particularly informative when assessing perceptions, challenges and lessons learned in obesity prevention intervention programmes (Agron, Berends, Ellis, & Gonzalez, 2010; Baskin et al., 2009; de Groot, Robertson, Swinburn, & de Silva-Sanigorski, 2010; Gittelsohn, Merkle, Mary, et al.,

2003). Mixed methods approaches have also been used to monitor fidelity of healthy eating and physical activity programmes (Schneider et al., 2009), to correlate school obesity prevention policy environments with obesity prevalence (Nanney et al., 2010), to assess stages of change associated with community-based obesity intervention programmes (Raine et al., 2010) and to implement community needs assessment (Li et al., 2009).

Challenges of using a mixed methods study design include: the need for the researcher to be acquainted with both quantitative and qualitative data collection and analysis techniques; the need for sufficient time and resources to conduct both phases of the research; and finally the issue of convincing others that this new approach to research is of value (Creswell & Plano Clark, 2007). A characteristic of qualitative data collection methods is that the procedures are tailored to the particular intervention and can only be evaluated for validity within the context of the setting for which they were planned (Schneider et al., 2009). While qualitative data collection is suitable for seeing patterns in behaviour, the results cannot be generalized to the wider population. However, the results can inform and add understanding to the quantitative data (Richards, 2005).

Attempting to put evidence-based knowledge into practice presents significant challenges for health promoters. Every school is a unique environment and does not necessarily behave in the way a clinical research model may predict (Kazdin, 2001). Health promoters may provide good evidence of what works in an intervention setting, but may find that the intervention does not work in a particular school environment. Health promoters need to understand what works in the field and under what conditions in order to implement effective interventions (Lochman, 2003). This study undertook to understand what works in the field.

2.6   Conclusion of the literature review

This chapter has reviewed literature associated with the research question.

The first section reports the literature investigating increasing prevalence of obesity amongst New Zealand children, with a focus on at-risk population groups and factors contributing to the increase.

The second section reviews health promotion principles including three health promotion models, the social determinants of health, Māori health concepts, and New Zealand health policies including policy changes to school-based initiatives.

The third section examines the role of schools in promoting health and the reports the results from school-based health intervention process evaluations including models for assessing programme effectiveness. This section also includes dimensions contributing to or associated with engagement namely, institutionalization, school climate, community capacity building, school connectedness, and leadership.

The fourth section justifies and describes the mixed method methodology adopted in the study.

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Chapter 3 Methodology, Design and Methods

This study aimed to identify through-school factors associated with perceptions of engagement and effectiveness of the Project Energize programme amongst participating schools.

A cross-sectional descriptive design using concurrent collection of qualitative and quantitative data was chosen to answer the research questions.

This chapter is divided into three parts. The first section justifies the use of mixed methods in this study. The second section describes the qualitative methods used in the collection and analysis of transcripts from the open questions in the 25 face-to-face interviews (Appendix A). The third section describes the quantitative methods used in the independent collection of frequency information/scores from the school stocktake questionnaire, Energizer scores and face-to-face school leader interview questions. This section concludes with how the data was analysed to test the three independent measures of engagement.

The first measure of engagement is derived from the semi-structured questionnaire, the second, the school stocktake score, and third, the rankings assigned by the Energizers to their schools.

3.1 Why closed and open-ended questions?

The theoretical framework chosen for conducting this research was a combination of postpositivism and constructivism worldviews. The postpositivist worldview allowed for the collection of specific empirical measures while the constructivist perspective provided the opportunity to build a deeper understanding and explanation for the empirical measures (Creswell & Plano Clark, 2007). Translated into practice the quantitative data provided evidence of the factors associated with engagement, while the qualitative data provided insight and understanding about the context for each school's level of engagement.

Limiting the study to quantitative data collection would have provided evidence of the factors associated with engagement but would not have provided insight into and understanding of the context of those factors. A qualitative study would have provided insight and understanding of each individual school in the subset but the results would

not have been generalizable to the whole population. A mixed method approach identified factors, as well as providing insight and understanding of context.

The semi-structured closed and open question interviews were conducted prior to the collection of school stocktake data and the 2011 Energizer scoring of engagement which was organised independently by the Project Energize director.

By combining the three sources of data obtained from the mixed methods research, the results were able to be triangulated and a complete understanding of the research problem achieved (Creswell & Plano Clark, 2007). In summary, the mixed methods approach allowed the research question to be answered.

The aim of the interviews was to develop an in-depth understanding of the factors associated with levels of engagement and effectiveness of Project Energize amongst participating schools. It provided an opportunity to learn from school leaders about their school's individual Project Energize experience and perspectives. As a Food and Nutrition teacher with 25 years of experience in schools, and a deep interest in child health, the researcher felt suitably prepared to hear the stories and underlying messages being shared.

3.2   The semi-structured questionnaire

The overall goal of this study was to understand better how and why the school engaged with the Energize programme, which is predicated by its programme goals. The semi-structured questionnaire tool was developed in collaboration with the academic advisor for the 2011 evaluation and was chosen for its consistency of questioning. The questionnaire, consisting of Likert scales (Bond & Fox, 2001) and open-ended questions, was divided into three sections (see Appendix A). The first section focused on motivation and expectations for the programme, the second section on programme participation and implementation which included assessing the goals of Project Energize, and the third section related to support and resources provided by Project Energize, future proofing and lessons learned. The questionnaire was "expert critiqued" by the programme director and the academic adviser for the evaluation to confirm content validity (Giddings & Grant, 2009) and confirm alignment with project goals. Once completed, the questionnaire was informally piloted among teaching colleagues to evaluate question sequence, ease of comprehension and interpretation. This is an

important part of ensuring questionnaire validity (Hawe et al., 2007). After piloting the questionnaire, a minor adjustment was made to the amount of time allocated to each question. During the informal pilot it became clear that school leaders needed more time to share their Project Energize experience.

In order to understand the work of the Energizers and develop a relationship with the Energize team, the researcher spent a day shadowing two Energizers in late 2010 as they worked with schools. This involved the researcher visiting three schools and assisting with the Energize programme.

3.2.1 Ethics Approval

An application to continue and extend the evaluation of Project Energize was applied through the Northern Y Ethics Committee. The research project was approved by the Northern Y Ethics Committee, reference number: NTY/10/04/041(see Appendix B). A memorandum about this sub-study was subsequently sent to the ethics committee, with the study proposal and planned questionnaire.

A parallel ethics application to continue and extend the evaluation of Project Energize was approved by the Auckland University of Technology Ethics Committee (AUTEC). Approval was granted by AUTEC, reference number 11/89 on 15 April, 2011. Appendix A- F includes AUT ethics documentation, principal information sheet, and consent form and interview questionnaire.

Guidance provided by AUT University (2006) and all Health Research Council accredited ethics committees state that the principles of Te Tiriti o Waitangi must be included when considering any research and planning for relevant consultation and research processes. It emphasises that knowledge gained and shared must incorporate the three principles of participation, protection and partnership. Thirty-six percent of children in the Waikato region are Māori (Statistics New Zealand, 2006a) providing support and justification for the following of these principles within the Energize programme, all evaluations and studies. The researcher followed cultural protocols such as spending a few minutes at the start of the interview to establish a rapport and common teaching links, not speaking over people, clarifying comments with school leaders in order to be sure the correct information had been received and writing letters of thanks to each of the school leaders involved.

The research process followed the principles of confidentiality and anonymity. School information collected was kept anonymous and details were not made public. Schools were identified only by decile, proportion of Māori enrolled, years in the programme and whether rural or urban. All information was treated with strict confidentiality.

The research observed the principle of partnership. Findings from the qualitative research formed part of the report prepared for the Waikato District Health Board and the Ministry of Health. Summary study results will be made available on the website www.projectenergize.org.nz and distributed to all participating schools.

The information collected in this research will have the potential to inform the development of local and national policy initiatives to address the increasing prevalence of obesity amongst New Zealand school children, especially those of Māori ethnicity.

3.2.2   School selection

Of the 191 schools participating in the evaluation of Project Energize (PE), 25 schools were purposively selected for interview data collection.

The Project Director worked with the Energizers to reach consensus on twelve characteristics of an engaged school (see Appendix H). The Energizers then selected six of their eight to twelve schools and categorized them as high engaged, medium engaged, or low engaged. Exclusion criteria included schools that: had been in the programme for less than 12 months (n=24); had been in the programme for less than two years and had other contributing circumstances such as a change of principal in the last year or a change in Energizer in the last term (n=18); had a recent change of principal or lead teacher in the last 9 months (n=29); had a commissioner in the school (n=2); or had a principal on sabbatical. To achieve a balance, inclusion criteria required that half of the schools had been involved in the programme for at least three years. Fifteen schools were selected as low engaged, nineteen as medium engaged, and twenty-eight as high engaged.

The Project Director then purposively selected 25 schools to represent the three levels of engagement, from as wide a geographical area as was practical. This number allowed further stratification by decile, percentage Māori, locality and school size. Participation was voluntary. Letters were sent to school leaders by the Programme Director, outlining the purpose of the research and inviting them to participate. This request could be

accepted or declined without negative repercussions. To the researcher's knowledge, no schools declined to participate. On acceptance, the Energizers provided the school leaders with a letter of introduction (see Appendix D), an information sheet (see Appendix E), a copy of the semi-structured questionnaire, (see Appendix A) and consent form (see Appendix F). Consent forms were collected at the time of the interview (see Appendix F).

Principal availability was confirmed and a list of schools with appointment dates and times forwarded to the researcher.

Participants consisted of the school principal, deputy principal, or teacher in charge (TIC) of Project Energize. Often the school determined that two or three staff attended the interview so that there was a balance of experience expressed. Sixteen principals, three principals with TIC, three TIC and three deputy principals took part in the interviews.

The questionnaire was followed systematically during the interview process. However, where necessary, comments and explanations were sought from the interviewee to clarify or expand an idea. This practice of allowing for diversions provided deeper understanding of the issues and is a procedure encouraged in qualitative research (J. Johnson, 2002). For example, the restricted interview time of 30 minutes was designed to reduce the burden on the interviewee and enhance efficiency, but on two occasions the interviews took 50 minutes as the school leaders discussed in more detail Project Energize and provided examples of their experience. Flexibility was provided on these occasions as they resulted in additional insights and perspectives. In four schools a tour of the school was undertaken to view examples of the effects Project Energize had on the school environment.

3.2.3 Quality of the open-ended question interview dialogue

Interviews were conducted within the school environment (with one exception) and during the school day. This was done to minimise disruptions to the working day and maximise feelings of comfort and rapport for the interviewee. The researcher reminded participants of her independent position and encouraged interviewees to speak honestly and openly. These strategies were used for the purpose of providing a positive, non-threatening relationship which would facilitate the collection of reliable and valid data (Richards, 2005). The researcher recorded the participants' responses to each of the

Likert scale questions on a separate form. This guided the researcher as to which questions had been completed and was used during the transcribing process to cross reference information from taped interviews.

3.2.4 Intra-interview reliability

Interviews were taped using a Sony, ICD-PX820 audio tape recorder and transcribed verbatim soon after each interview. Field notes (see Appendix G) including general observations and procedural variations were kept and subsequently referred to during the transcription process. Transcription accuracy was increased through involved multiple reviews of the interview. Clarification and follow-up phone calls were sought if interview material was unclear or missing. This occurred on four occasions when the school leader did not have the necessary information and needed to consult with a colleague. These procedural steps were designed to maintain intra-interview reliability and enhance rigour (Giddings & Grant, 2009).

3.2.5 Researcher bias and self-reflexivity

Before conducting the face-to-face interviews, the researcher identified and explored personal biases, ideas, assumptions and emotions with respect to this project. Memorandums to self were written and reviewed throughout the research process. This approach allowed the researcher to develop a more open mind to see and hear clearly what was going on in the research interview (Richards, 2005). It was important to do this in order to understand and report independently the school's experience and perspectives. As a passionate and enthusiastic teacher with many years of experience the researcher had developed personal views of committed and effective school leadership. On occasions during the face-to-face interviews the researcher met with school leaders who appeared dis-engaged from, and critical of, Project Energize. The researcher's initial reaction was one of frustration and annoyance. However she realised those thoughts were a potential threat to the trustworthiness of the research process. The situation was dealt with by acknowledging and examining the feelings and then "parking" the interview for a period of time while personal views were distanced from the research process. This practice allowed the researcher to appreciate a wider range of perspectives than if she had allowed her personal biases to dominate (Babbie, 2008).

In order to reduce bias and subjectivity, the researcher was blinded to the Energizer perceived engagement status of the schools. Engagement status was revealed by the

Project Energize Project Director once the final interview and initial analyses were completed.

In order to further minimise researcher bias, modifications were made to the researcher's interview style. This was done after listening to the first taped interview and realising the researcher had a tendency to interrupt the conversation and add comments. Adjustment resulted in the researcher becoming more of a listener than a conversationalist.

All of these research procedures were followed to minimise bias and ensure that valid and trustworthy qualitative data was collected (J. Johnson, 2002) prior to thematic analysis.

3.2.6   Thematic analysis

The purpose of the analysis was to generate important themes that were related to engagement and participation in the Project Energize programme: what worked, what was difficult and the circumstances of these ever-changing school conditions. Transcribed interviews were analysed using inductive thematic analysis (Pope, Ziebland, & Mays, 2000; D. Thomas, 2006). The researcher under-took training with an AUT staff member who provided an exemplar for analysis. Transcripts were read multiple times and sections of the transcripts coded using words or phrases to categorise the statements made. Each transcript was coded multiple times with codes reassigned or changed where necessary. Common codes were linked into sub-themes, then themes. Key features, context and conditions were developed to characterise emerging themes. The coded transcripts were interrogated until no new themes emerged (D. Thomas, 2006). Six themes were identified and the process is reported in more detail in Chapter 5 and in Appendix I. A research diary was maintained to keep track of the research and decision-making process. To assist with validation of the qualitative findings, triangulation with the quantitative data and colleague checking was used. This involved two post-graduate students and a researcher, who were involved in thematic analysis, critiquing and providing feedback on the interpretation of the emerging generic themes. This method of checking added to the study's auditability (Giddings & Grant, 2009; Richards, 2005). The thematic analysis process is reported in more detail in Chapter 5. The next section looks at the derivation of engagement scores.

3.3   Scores of engagement

The intention was to test the following hypothesis: schools achieving all of the goals of Project Energize will be perceived by Energizers as being more engaged with the Project Energize programme than schools which do not meet all of the goals.

Three independent measures (see Table 1 below) related to school engagement in Project Energize were made using the interview score, school stocktake score, and Energizer score.

Table 1: Description of measurement tools

Measurement Tool	Description of tool
Interview score of engagement	Tool assessed 15 Project Energize goals (school leader perception) and weighted themes derived from interview perceived to be associated with higher levels of engagement.
School stocktake score of engagement	Tool assessed healthy eating and physical activity school policies and practice (schools leader perception).
Energizer score of engagement	Tool assessed school engagement over 2 points of time using predetermined criteria that related to school attitude and behaviour (Energizer perception).

3.3.1   Interview score of engagement

The interview score for engagement was calculated after all the interviews had been completed and content analysis finalised. This score was achieved by combining subjective scores from the 15 Project Energize goals reported on in the interview questionnaire and weighted criteria arising from the qualitative thematic analysis (see Appendix J and Table 2).

The fifteen goals comprising nine healthy eating goals and six physical activity goals were each allocated a maximum score of two. A score of two was awarded if a school's response lay between five (intermediate success) and seven (most successful) and a score of one awarded if a school's response equalled four. Scores were not assigned to responses below three. The assigned numerical values reflected the high mean goal scores reported.

The numerical values assigned to the themes reflected the researcher's perceived value of the themes. A review of the literature highlighted the significance of leadership,

institutionalisation, school climate or ethos in the success of a school health invention programme, and a positive relationship with implementation staff. The researcher allocated a maximum score of 10 to school leader's commitment to Project Energize, perceiving a school community health need, willingness to change cultural mores, establishing a substantial relationship with the Energizer. She also assigned a maximum score of five to willingness to overcome barriers and teachers demonstrating a commitment to Project Energize, including engaging professional development. The reduced score for willingness to overcome barriers reflected the impact that "other school-factors" (socio-economic factors, transience, parental knowledge and skill) have on a school's ability to overcome barriers. A reduced value for teachers demonstrating commitment to Project Energize was chosen to reflect the impact school leadership has on professional development decisions. The basis for this decision stemmed from personal experience working in the field for more than 25 years. Based on the combined weightings of the goal scores and the selected themes, a maximum score of 100 was calculated for the 25 schools (see Appendix J and Table 2 below).

This process was subjective but the researcher felt that the assigned numerical values fairly ranked the relative performance of the schools under each of the assigned categories.

Table 2 below shows the categories and weightings used to measure interviewer engagement.

Table 2: Categories and weightings used to measure engagement in face-to-face interviews

Categories- Evidence from open-ended questions	Maximum Weightings
School leader commitment to Project Energize	10
School /school community perceives a need (health, educational, social, financial) that can be addressed by Project Energize	10
Willingness of school to change cultural mores in order to meet the philosophy of Project Energize	10
Evidence of a substantial relationship with Project Energizer	10
Evidence of school achieving nine healthy eating goals	18
Evidence of school achieving six physical activity goals	12
School makes positive changes over time	10
Future proofing	10
Willingness to overcome barriers	5
Teachers show commitment to Project Energize, participate in professional development	5
Evidence from closed Likert scale questions	
Evidence of school achieving nine healthy eating goals	18
Evidence of school achieving six physical activity goals	12
Total	**100**

3.3.2   School stocktake score of engagement

The school stocktake questionnaire used in the 2004 and 2006 evaluation was repeated in March-May 2011 to provide a measure of school engagement in the Project Energize programme. Each school had the 80 question questionnaire (see Appendix K) completed by the Energizer assigned to that school.

Questions that related to school information including decile, school roll, percentage Māori, term dose, location, as well as questions relating to healthy eating and physical activity school policy and practice were chosen from the questionnaire. The eleven non-categorical Likert scale questions (question 11 a, b, c, d, e, f, 26, 59, a, b, c, d, e and 68 b, d) were chosen because they were applicable to all schools and provided an

indication of engagement in Project Energize. Questions not considered related to external or internal lunch order service, care programmes before and after school, transport, and food security. Questions relating to "water" were not included as the majority of schools had indicated in the school stocktake and face-to-face interviews that they had made changes to make water readily available to all students prior to Project Energize.

The responses to school stocktake questions were numerically coded and combined to produce a total score (n=69) for school engagement. Question 11, comprising six separate questions, each of which had a maximum value of 5 (1=very poor, 2=poor, neither=3, good=4, very good=5), and a maximum score of 30. Question 26 had a maximum value of 4 (1= less healthy, 2=no change, 3=healthier, 4=a lot healthier). These questions relating to healthy eating school policy, practice and changes since Project Energize was introduced had a combined score of 34. Question 59 comprising five sub-questions, each of which had a maximum value of 5 (1=very poor, 2=poor, neither=3, good=4, very good=5) had a maximum score of 25. Question 68 was comprised of two separate sub-questions, each of which had a maximum value of three, had a maximum score of six (1=less frequently, 2=the same, 3=more frequently) while question 70 comprising one question had a maximum value of four (1=worsened, 2=not changed, 3=improved, 4=improved greatly). These questions relating to physical activity school policy and practice and changes since Project Energize had a combined score of 34.

3.3.3 Energizer score of engagement

In March 2011 the "Energizer" assigned to each school used predetermined criteria to numerically score each school's level of engagement. The first score was a retrospective assessment of school engagement prior to October 2010 and the second score an assessment of school engagement between October 2010 and April 2011. It was decided after discussion with the programme director to use the combined pre- October 2010 score and the post October 2010 as the independent measure of Energizer engagement. The director said that this score took into account changes over time as well as assessing Energizer engagement. A total score out of ten was derived by combing the two scores, each of which had a maximum score of five. This quantitative method was chosen by the Project Energize programme director to validate the previous October 2010

Energizer ratings of engagement which had allocated schools into high, medium or low categories.

3.4 Results interpretation

For the 24 schools, the subset of school stocktake data from schools (described in the measurement of engagement section) was triangulated with the interview information and the Energizer ratings to identify characteristics of engaged schools. (NB: one of the schools involved in the face-to-face interviews chose not to participate in the school stocktake). This was done by correlating the three independent measures of engagement in order to determine the degree of association. The comparison of the three ways of measuring engagement was a necessary step to see if the results from the three independent sources converged or corroborated.

3.4.1 Statistics

Data from the school stocktake, face-to-face interview questionnaires and Energizer ratings was entered and analysed using SPSS 18.0. This involved checking the data for errors, recoding the data numerically, entering the data into SPSS. The data was tested for normality, and was found to be right skewed. Therefore non-parametric tests of agreement were undertaken: Spearman's Rho coefficient and the Kappa Measure of Agreement.

Spearman's ρ Rho a rank correlation was used to determine the degree of association between the three measures of engagement (school stocktake, Energizer and interview scores) and the dependent variables (decile, % Māori, locality, time in programme and roll) to determine which factors were associated with higher levels of engagement. Cohen (cited in Pallant, p. 134) interprets Spearman's ρ Rho values between 0.10 to 0.29 as a small effect, values between 0.30 to 0.49 as a medium effect, and values 0.50 to 1.0 as a large effect. A large effect indicates a strong relationship whereas a small effect indicates a weak relationship (Pallant, 2010).

The Kappa Measure of Agreement, for qualitative (categorical) items was also used to determine the degree of association among the three measures of engagement (school stocktake, Energizer and interview scores). Kappa values above 0.75 were taken to represent excellent agreement beyond chance; values below 0.40 were regarded as

representing poor agreement beyond chance. Values between 0.40 and 0.75 were taken to represent fair to good agreement beyond chance (Landis & Koch, 1977).

Chapter 4 Measures of Engagement of Schools with the Goals of Project Energize

This chapter reports on the analysis of the responses of twenty-five school leaders to the closed questions in a structured questionnaire completed during a face-to-face interview. The questions concerned which Project Energize goals that schools worked on, the perceived effectiveness of the programme in helping schools meet their goals, and the usefulness of resources.

This is followed by a comparison of the three independent scores of engagement, which includes the score based on responses to the open and closed questions asked during the interview, a score derived from school stocktake and the score assigned by the Energizer allocated to that school.

4.1 School characteristics

Twenty-five school leaders, mainly principals, from a diverse range of schools (see Table 3) were interviewed. Of the twenty-five schools involved 10 schools were low decile (1-3), 11 schools medium decile (4-7) and 4 schools high decile (8-10). Seventeen schools were rural (i.e. not in the Tokoroa or Hamilton areas) and eight schools had rolls that were more than 50% Māori (median 37%). At least half the schools had been a programme school for at least four years (16 terms), and the time of engagement ranged from 4 to 24 terms in the programme.

Table 3: Demographic profile of schools involved in the face-to-face interviews

Decile	Engagement	School ID number	Roll	Locality	% Māori	Time in Programme (school terms)
1	Medium	13	35	rural	100.0	14
1	High	8	268	urban	76.5	24
1	Medium	18	290	urban	83.8	16
1	Medium	22	101	rural	89.1	5
2	Low	25	201	rural	51.2	14
2	High	23	209	rural	41.6	24
3	High	24	126	rural	26.2	3
3	High	1	243	urban	69.1	4
3	High	19	11	rural	81.8	24
3	Low	3	155	rural	32.9	4
4	Medium	12	413	rural	16.5	4
4	High	20	278	urban	41.7	16
4	Medium	4	399	rural	60.2	15
4	Medium	10	378	urban	47.1	10
5	High	21	83	rural	43.4	4
5	High	2	243	rural	37.0	4
5	High	5	79	rural	27.8	4
6	Medium	6	623	urban	27.8	24
7	Medium	17	133	urban	4.5	24
7	Medium	15	342	rural	21.3	24
7	Low	7	492	urban	24.8	4
9	Medium	16	73	rural	15.1	12
9	High	14	256	rural	11.3	24
10	Low	9	370	urban	6.5	16
10	Low	11	185	urban	9.2	24

School demographic information is taken from Ministry of Education 2010 data. Time in programme refers to the number of school terms involved with Project Energize programme maximum time=24 terms, Engagement centred on initial PE Project Director Classification.

4.2 Project Energize programme goals

The programme goals are centred round healthy eating and physical activity. All teachers agreed that the promotion of healthy eating and physical activity was important in their schools and 13 of 25 said that it was extremely important.

The three specific Project Energize goals that the schools had mainly worked on and were considered most successful were those that related to promotion of water as the best drink, the availability of healthier food choices, and fruit and vegetable consumption (see Table 4). It was stated by some that the achievement of these goals was considered most successful because they related to aspects of the school environment that the school could more easily control. The schools that were less successful in improving food choices either did not choose to focus on the healthy eating component of the programme or reported that there was limited time and the least successful goals (ranked 10th to 15th as shown in Table 4 below) were out of the direct influence of the school (see Chapter 5.3 on page 71, Chapter 5.4 on page 76, Chapter 5.7 on page 87).

Table 4: Project Energize Nutrition and Physical Activity Goals

(ranked by perceived success of the school in meeting these goals. Possible scores ranged from 1(most difficult) to 7 (most successful))

Rank	Project Energize Goal	Mean Score	Range
1	Ensure water is available in class	6.6	6-7
2	Encourage and promote water as the best drink	6.5	4-7
3	Encourage and advocate for an increase in availability of healthy choices at school and a decrease in high energy /low nutrient foods	6.1	3.5 -7
4	Encourage an increase in fruit and vegetable consumption	5.8	3-7
5	Raise awareness of the importance of children learning fundamental movement skills and movement literacy	5.8	2-7
6	Encourage a minimum of 20 minutes daily physical activity	5.7	2-7
7	Work towards consistent nutrition messages in all aspects of school and community interaction e.g. healthy fundraising options.	5.6	3-7
8	Advocate for and encourage lunchtime physical activity at least twice a week	5.5	2-7
9	Work towards registration in the NHF Healthy Heart Award for schools: Tohu Manawa Ora-Kura	5.4	0-7
10	Advocate for and encourage improvement of food brought from home, especially a reduction in the amount of high energy low nutrient food	5.4	3-7
11	Increase the awareness of the importance of breakfast and encourage a breakfast habit	5.3	1-7
12	Raise awareness of incidental opportunities at home and school	4.9	3-7
13	Encourage the consumption of milk and other high calcium foods every day	4.6	1-7
14	Encourage and advocate for at least five minutes of 'home play' each day	4.6	2-7
15	Encourage a reduction in sedentary time especially screen time if over two hours a day	3.8	1-7

Goals ranked by the 25 schools from most successful to most difficult. Range 7 most successful, 4 intermediate, 1 most difficult.

4.2.1   Programme support

School leaders were asked the question "How effective has Project Energize been in meeting your school's Project Energize goals?" A scale of 1-7 was used with 1 being not at all effective, 4 being effective, and 7 being extremely effective. The mean

response was 6.3 (range 4.5-7) indicating that schools found the programme either very effective' or 'extremely effective'. The one school that responded with 'effective' rather than 'very effective' or 'extremely effective' explained that it had already made the commitment to healthy eating before signing up to the programme and felt they didn't feel a need for a lot of initial support.

When asked "How useful do you find the Project Energize resources?" the mean response was 6.4, indicating that schools found the resources 'very useful' to 'extremely useful' (range 5-7).

When asked "How difficult would it be to implement the goals of Project Energize without support?" a scale of 1-7 was used with 1 being 'impossible', 4 being 'neutral' and 7 'extremely easy'. The mean response was 2.5 (range 2 to 4), indicating that schools would find it moderately difficult to very difficult. No school said it would be easy.

All schools said that Project Energize would not work without the Energizers.

Twenty-four of the 25 school leaders said the programme's healthy eating and physical activity changes were supported by parents. The single school that reported that they did not have the support of parents had only participated in the programme for twelve months and its focus had been on physical activity rather than healthy eating.

4.2.2 Challenges

School leaders, in low socio-economic areas, spoke of the difficulties facing families. Financial hardship, lack of skill, and motivation were raised as barriers to implementing the programme.

Other barriers to implementation included a lack of time in an already over-crowded curriculum, student transience, insufficient Energizer time, lack of wet-weather physical education facilities, and pressure to fundraise (see Chapter 5.7 on page 87).

4.3   Engagement Scores

4.3.1   Interview scores for engagement

Based on the combined weightings of the Project Energize goal scores and selected themed categories, the mean score for the 25 schools was 74.0 out of a total possible score of 100, SD=19.1 (range 31.5 to 99). There was wide variability in the scoring indicating that some schools were finding it easy to achieve the Project Energize goals and other schools were finding difficult. A mean score of 74.0 indicated moderate to high engagement for the majority of schools (see Appendix J).

4.3.2   School stocktake score for engagement

Based on combined healthy eating and physical activity, a school stocktake score for engagement was calculated. School stocktake questions were weighted so that a maximum possible score was 69. The weighted mean score for 190 schools was 54.4, SD =7.6 (range 23 to 69). These results indicate a wide range of variability in the school stocktake engagement scores based on the following stocktake questions: healthy eating school policies and practices, physical activity school policies and practices, changes in food bought from home since becoming an Energize school, and use of school physical activity resources since becoming an Energize school (see Appendix K).

4.3.3   Energizer scores for engagement

The Energizers retrospectively rated the schools at two points in time; October 2010 and March 2011. The 2010 score showed high agreement with the Energizer 2011 score. For 188 schools rated at both time-points the Spearman's ρ rho correlation coefficient was $\rho=0.72$, $P<0.000$, indicating moderate to high consistency of Energizer perceptions.

For the subset of 25 schools the Energizers October 2010 score and March 2011 scores were positively correlated with the interview score ($\rho=0.51$, $P<0.011$ and $\rho=0.68$, $P<0.0001$). Based on combined October 2010 and March 2011 ratings, a total score out of ten was calculated. The mean score for the 188 schools was 7.21, SD = 1.93, (range 2 to 10). For the 25 schools the Energizer score was correlated with the interview score ($\rho=0.61$, $P<0.002$).   In other words, however examined, there was moderate agreement between the interview derived score and the Energizers' ranking of schools.

Using the Energizer combined score for engagement in the 188 schools, high scores ranging from 8 to 10 were found in 46.3% of schools, medium engagement

(score 4 to 7) in 49.4% of schools and low engagement in 4.3% (score 2 to 3) of schools. There were only eight schools perceived as low engaged.

Using the combined (2010 and 2011) Energizer score for engagement, of the 25 schools interviewed, three schools were perceived to be low engaged, eight medium engaged and thirteen high engaged (one school withdrew from the school stocktake after the interview so was not included in the Energizer score for engagement).
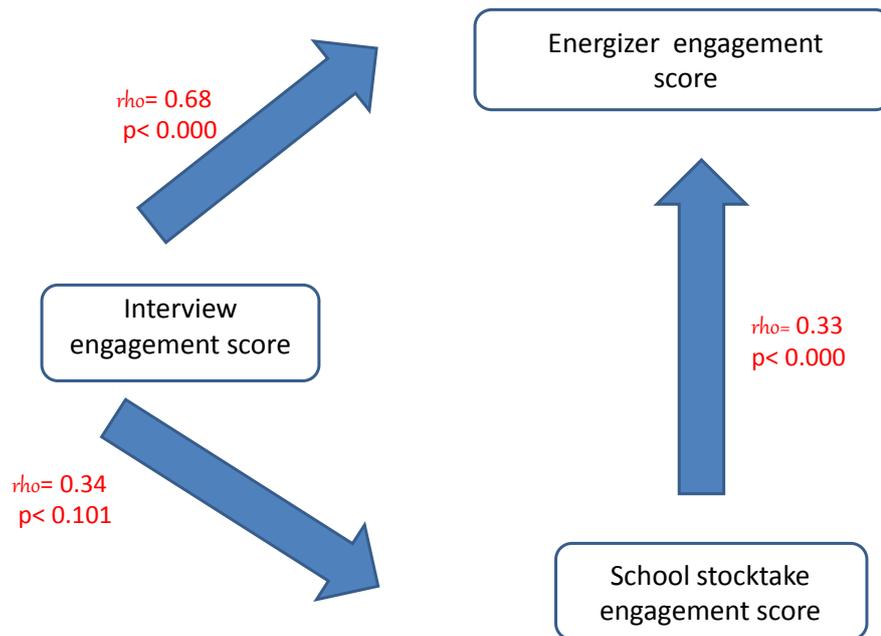
The degree of association for three independent measures of engagement

Figure 2: Spearman's ρ rho coefficient correlation for interview, Energizer and school stocktake engagement scores

Figure 2 shows associations among the three different scoring tools: interview engagement score, Energizer engagement score, and school stocktake engagement score. Each of the engagement tools had a different focus with the interview score focusing on weighted scores for Project Energize goals and selected themed categories, the school stocktake focusing on weighted scores for selected healthy eating and physical activity, questions and the Energizer score for engagement based on jointly agreed weighted criteria that related to school attitude and behaviour to Project Energize. The strongest level of agreement was between the Energizer and interviewer scores of engagement ($\rho=0.68$, P<0.000, n=24). Moderate agreement was found between the Energizer and

school stocktake scores of engagement (ρ=0.33, P<0.000, n=24) and interviewer and school stocktake scores of engagement (ρ=0.34, P<0.101, n=24).

Figures 3, 4, and 5 demonstrate the variability and the presence of some outliers in the relationships between the scoring systems. The strongest association is shown in Figure 3 with few outliers between interviewer engagement score and Energizer engagement score. Figures 4 and 5 show very low positive correlations between the school stocktake engagement score and Energizer engagement score, r^2 = 0.08, n= 188, and the interviewer engagement score and the school stocktake engagement score, r^2 = 0.08, n= 188. Both graphs show there are outliers, indicating variability in the scoring of engagement.
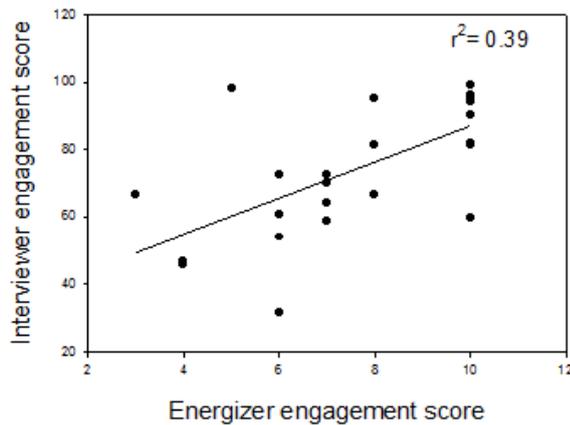
Figure 3: Scatter plots of Energizer and interviewer engagement and regression line
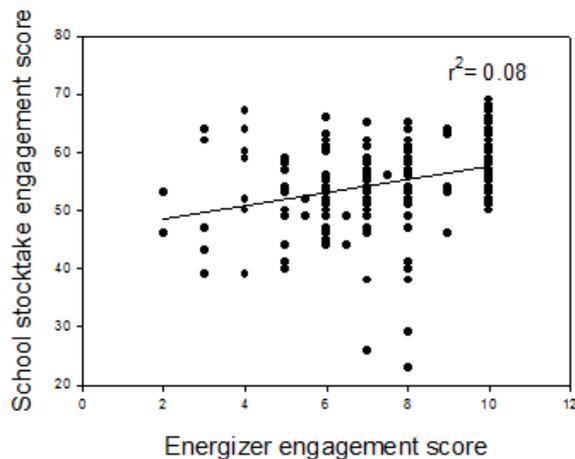
Figure 4: Scatter plots of Energizer and school stocktake engagement and regression line
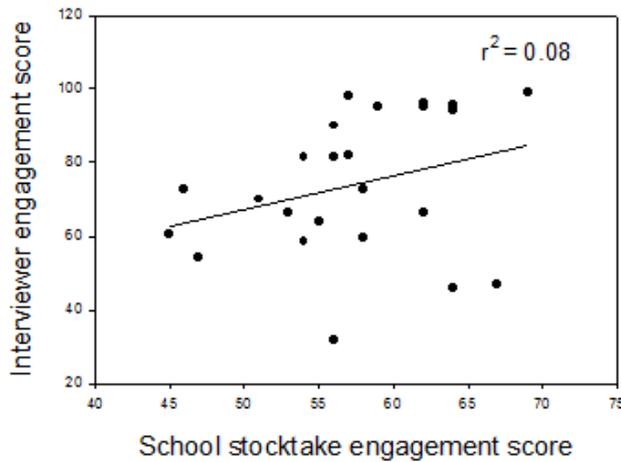
Figure 5: Scatter plots of school stocktake and interviewer engagement and regression line

4.3.4   Kappa Measure of Agreement

The Kappa Measure of Agreement was used to test agreement between the categorical (low, medium and high) scores for the three independent engagement scores. This test required continuous data in each set to be converted to categorical data.

The Energizer engagement score was converted from a scale (2-10) to three engagement categories consisting of low, medium and high. A score between 2 and 3 was classified as low engagement; a score between 4 and 7 was classified as medium engagement, and a score between 8 and 10 was classified as high engagement.

The researcher interview score was converted from a scale of 1:100 to 1:10 and then converted to categories low, medium and high using the same category classifications as the Energizer score classifications.

The school stocktake score was converted from a scale of 1:69 to categories low, medium and high. This involved transforming the data into tertiles and of allocating an equal number of scores to each tertile. A score below 52 was classified as low engagement; a score between 52 and 58 was classified as medium engagement, and a score between 59 and 69 was classified as high engagement.

The Kappa Measure of Agreement between Energizer and interviewer scores was 0.84, $p < 0.05$, 95% CI (0.74, 0.94) which represents "excellent agreement" (Landis & Koch, 1977). The Kappa Measure of Agreement between Energizer and school stocktake scores was 0.01, $p < 0.013$, 95% CI (0.14, 0.04) which indicates slight agreement (Landis

& Koch, 1977). The Kappa Measure of Agreement between school stocktake and interviewer scores was 0.01, p<0.013, 95% CI (0.14, 0.04) which indicates "slight agreement" (Landis & Koch, 1977).

4.3.5 Factors associated with lower levels of engagement

The Spearman's ρ rho coefficient was used to show the relationship between each of the three engagement scores and characteristics of the school that could affect engagement: decile, % Māori, time in programme, and locality (rural or urban). There was a small positive correlation between Energizer and stocktake scores of engagement and decile schools, $rho = 0.20$, n = 188, $p < 0.006$, $rho = 0.19$, n = 188, $p < 0.010$ respectively indicating amongst 188 schools, higher levels of engagement were associated with higher decile schools. This was in contrast to the interviewer score for engagement, which showed there was a medium, negative correlation between interviewer score of engagement and decile, $rho = \text{-}0.39$, n = 24, $p < 0.063$ indicating that engagement as rated by the interviewer in the selected 25 schools was associated with lower deciles.

There was a small negative correlation between Energizer and stocktake scores of engagement and % Māori, $rho = -0.18$, n= 188, $p < 0.02$, $rho = \text{-}0.20$, n = 188, $p < 0.007$ respectively, and moderate, positive correlation between interviewer score of engagement and decile, $rho = 0.41$, n = 24, $p < 0.050$ indicating that engagement was apparently higher in schools that had a lower percentage of Māori students enrolled. This was in contrast to the association of percentage Māori in relation to the interviewer score for engagement which showed $rho = 0.41$, n = 24, $p < 0.050$. There was no significant relationship between the three measures of engagement with how long the school had been in the programme, locality or school size. Table 3 below summarises the degree of association between each score of engagement and the four independent variables, decile, % Māori, time in programme, and locality.

Table 3: Spearman's ρ rho coefficient showing the degree of association between each score of engagement and the dependant variables (decile, % Māori, time in programme, and locality).

Factors			Energizer score	School stocktake score	Interviewer score
Decile `	Spearman's	rho	.199**	.189**	-.385
	Sig.(2-tailed)		.006	.010	.063
	N		188	188	24
% Māori	Spearman's	rho	-.176*	-.197**	.405*
	Sig.(2-tailed)		.016	.007	.050
	N		188	188	24
Roll	Spearman's	rho	.039	.064	-.358
	Sig.(2-tailed)		.598	.380	.085
	N		188	188	24
Locality	Spearman's	rho	.087	-.064	-.058
	Sig.(2-tailed)		.236	.380	.790
	N		188	188	24
Term Dose	Spearman's	rho	.109	.076	-.022
	Sig.(2-tailed)		.138	.302	.920
	N		188	188	24

**Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

4.4 Results Summary

Three independent measures of engagement were created using the information taken from the interviews, the school stocktake and Energizers. The measures that were closest in agreement were the Energizer score for engagement and the interviewer score for engagement. Using the Energizer score for engagement, engagement across 188 schools was associated with socioeconomic status and ethnicity. Engagement was not significantly affected by school location, school size, and time in programme. Both correlation analysis, the Kappa measure of agreement and the patterns of association shown in Figures 3-5 show that there is some agreement, but it is not strong.

Chapter 5 What School Leaders said in the Open-ended Questions

The objective of the thematic analysis was to capture the essence of the school's Project Energize experience, to find out what was working, what was not working, and what could be done differently in the future to ensure that Project Energize is able to make a positive difference in the school community. The process was methodical and rigorous and represented several months work, coding and categorising the transcripts.

The open-ended questions included in the questionnaire are shown below.

1. What was the deciding factor in committing your school to take part in Project Energize?

2. What do you perceive to be two to three main benefits for your school from engaging in Project Energize?

3. What do you perceive to be two to three main benefits for your school from engaging in Project Energise?

4. What are the biggest changes you have seen in your school since the programme started (children, school environment, community)?

5. What are the biggest changes you have seen in your school since the programme started (children, school environment, community)?

6. What do you do now that you didn't do before?

7. What changes have given your school community a buzz?

8. Reflect on your answers to questions 1 and 2. (READ BACK). Was the programme as successful as you thought it would be?

9. What has got in the way of or supported your school's progress in meeting the goals?

10. What do you think would help protect the progress made and assist with making further progress?

11. Are there any other comments you would like to make about Project Energize that could contribute to its on-going implementation and success (lessons learned, success stories that haven't been covered)?

Six major themes emerged from the discussions with principals, deputy principals and lead teachers. These themes, although inter-related, are initially described separately. They include the perceived need of the school community, commitment from school leaders to Project Energize, willingness to change cultural mores in order to meet the philosophy of Project Energize, having an effective relationship with the Energizer, future-proofing in order to sustain Project Energize, and challenges to implementing Project Energize. Each theme is defined, discussed and illustrated with case evidence from the twenty-five interviews. Discussions conclude with a diagram showing the relationship of the five themes and how they are associated with high levels of engagement and effectiveness in Project Energize.

5.1   Process of delineation of six major themes

After reading the interview transcripts several times, nine content areas were selected for exploration. These were key school people, history, perceived school need or opportunity, school culture or ethos, relationship with Energizers, future sustainability of programme, barriers to implementation, financial, and "others". Text was allocated to one of the content areas, condensed and analysed for underlying meaning, sub-themes and themes. An exemplar is provided to illustrate this process (see Appendix I). As the thematic analysis progressed, content areas were merged and other content areas disregarded due to insufficient relevance.

Table 5 below shows the progression from text, through to interpretation of the text, development of sub-theme and theme.

Table 6 provides an example of the progression for each of the five identified themes.

Table 5: Example of meaning units, condensed meaning unit, sub-themes and themes from thematic analysis of the face-to-face interview with school leaders.

Meaning Unit	Condensed meaning unit with description close to text	Interpretation of the condensed text	Sub-theme	Theme
"When I first came here as Principal we had a lack of students being active. As an active person myself I found that very difficult. I was also alarmed about the food our students were eating".	Principal concern for student health and well-being	School leader feels a responsibility to promote health and well-being	Sense of responsibility, motivation, knowledge and understanding underpin commitment	Thorough commitment to Project Energize
"It all comes down to learning. Curriculum leakage occurs unless the children are eating properly".	Curriculum leakage occurs unless the children are eating properly	Principal believes in the link between health and education	Knowledge and understanding yields commitment	Thorough commitment to Project Energize
"I think there is no exception to the rule. You put your stake in the sand and you stick by your morals and beliefs because actually it improves student learning".	There is no exception to the rule	Values and beliefs underpin principal's steadfast attitude	Values and beliefs strengthen committed leadership	Thorough commitment to Project Energize

Table 6: Development of themes from codes, through to sub-themes through to themes

Codes	Sub-themes	Level 2	Themes
Overweight students, students lacking physical coordination, unhealthy food intakes, parents lacking skill, knowledge and motivation.	Health, economic, educational and or social need recognized by school community	Perceived need affected by school ethos, culture, "other" school priorities Schools that don't perceive a need	The perceived need of a school community
School leader believes in the importance of and gives priority to healthy eating and physical activity in school. Beliefs underpinned by knowledge from Project Energize programme and its ability to address need.	School leaders inspire, motivate, galvanize, empower others in school community to change	Challenges to committed leadership	School leader commitment to Project Energize
Schools willing to change school food environment, engage at-risk families, up-skill communities, improve access to physical activity and healthy eating in the wider community.	Working in collaboration with Energizer to set up initiatives and tailored programmes. Pursuing programmes year after year.	Willing to change despite barriers and challenges. School leader prepared to set and enforce firm boundaries in order to up-hold Project Energize principles.	Willingness to change cultural mores in order to meet the philosophy of Project Energize
School has positive, mutually respectful and trusting relationship with Energizer. Project Energize promotes and upholds	Impact of effective interactions with Energizer. High quality PE resourcing results in: improved teacher knowledge	A reduced Energizer relationship due to insufficient Project Energize time, disagreement with the "black and white	Effective relationship with Energizer

Codes	Sub-themes	Level 2	Themes
the key concepts of the Treaty of Waitangi, namely, Participation, Protection and Partnership.	and confidence; improved teaching of physical activity and healthy eating; Energizer supports school to make healthy food and physical activity changes.	method" of delivering the healthy eating messages.	
Making Project Energize a priority in the school and ensuring gains made are protected.	Procedures employed to ensure Project Energize is protected.	Factors impacting on sustaining Project Energize.	Future proofing in order to sustain Project Energize.
School-wide factors affecting engagement and participation of Project Energize.			Challenges to implementing Project Energize.

5.2   Theme 1: The perceived need of school community

A dominant theme to emerge in the dialogue provided by those schools which thoroughly committed themselves to Project Energize was the strong connection between the perceived needs of the school community (children and families) and the perceived potential of the Project Energize programme to provide support to respond to those needs.

Where the school leader perceived a need in their community, i.e. health, social, economic and/or educational, they actively participated in the project Energize programme. These school leaders saw the implementation of Project Energize as an opportunity to address specific needs in their school communities and improve educational and health outcomes for students and families. Several participants of lower decile schools expressed the view that their families were struggling and needed help to address socio-economic issues before focusing on education. Conditions of family dysfunction, financial hardship, a lack of skill, and motivation were problems facing some of these low-decile families.

> These families and these children need help all of the time. You can't just do one-offs and expect them to learn something and do it. They need it all of the time. All of our education data from our school, all of our health data show us that these people need help all of the time. (Deputy Principal 23, rural school, decile two)

> All the children get fruit and veggies at morning tea, and we also hand out after school. Yes. We have really worked hard on this. We promote the idea that peanut butter sandwiches are better than a packet of chips! Our senior girls take two platefuls of peanut butter, marmite, jam with wholemeal bread out into the playground each day supplied by 'Kids Can'. (Principal 22, rural school, decile one, c)

Another principal felt education needed to extend beyond the fundamental literacy and numeracy skills and include life skills.

> ERO (Education Review Office) sent a sheet to say they are only interested in student achievement. I would say we are trying to grow whole people with the skills to be successful in a wide range [of skills] and yes our student achievement has gone up greatly, but I don't want their whole focus to be on just National standards. (Principal 22, rural school, decile one, c)

Participants of urban schools that were medium to low decile mentioned the refugee component of their schools and their desire to assist these typically low income families.

Participants of high decile schools did not discuss socio-economic community concerns. The focus, in contrast, was on parents' ability to support their children in physical activity programmes.

> We have very supportive parents with after-school tennis, swimming, dancing. We have four netball teams, three senior teams this year, basketball is ballooning. When I first came here we had no [hockey] teams, now we have five. Parents are a driving force. (Principal 14, rural school, decile nine)

The second theme to emerge was the school leaders' "sense of responsibility" of the school in the community.

5.2.1 Sense of responsibility

Schools that recognised a responsibility to promote Healthy Eating (HE) and Physical Activity (PA) in order to improve health outcomes tended to be more committed to Project Energize. Staff in some schools perceived the school as the default institution for promoting healthy eating in circumstances where the home did not. The opinion was given that this was because the institution that would traditionally do this, the family, had failed to. Amongst some staff, concern about this perception was just as profound as their commitment to deliver the school curriculum. Meeting these primary health needs in deprived areas was considered a pre-requisite to education. Good health outcomes, it was argued, underpinned good educational outcomes.

It is just rubbish [referring to National Standards] when we have poverty - financial poverty, literacy poverty and poverty of the spirit. Those issues have to be addressed before the children arrive at school. (Principal 10, urban school, decile four)

It would be nice if someone else did [promote healthy eating and physical activity in schools] but since they don't it actually becomes very important for us. And that is because our community don't really have the knowledge. (Deputy Principal 18, urban school, decile one)

The third theme to emerge was the school leaders' recognition of need.

5.2.2 Recognising the need

Recognising the need and then taking up the Project Energize opportunity unconditionally was the hallmark of highly engaged schools. When asked about the benefits of engaging in Project Energize, Principal 19 highlighted the need to address the issue of obesity in her low socio-economic Māori community. Evidence from the 2006/2007 New Zealand Health Survey had shown that 37.7% of Māori were overweight or obese in comparison to 26% of the rest of the European population and Māori households were more at risk of food insecurity than New Zealand European households (Ministry of Health, 2009a). Recognising the health need of the school community and potential of the programme to address the issues underlying the health problems was a characteristic of highly engaged schools.

At that stage, I did have what I would have called, the majority of my students overweight with two or three obese children. It [addressing over-weight in students] was probably a need as well. (Principal 19, rural school, decile three)

Some higher decile schools recognised that there was a need to develop specialised physical activity programmes to cater for students who started school with deficits in their physical development. Classroom teachers understood the importance of this skill

development and valued the support and professional development provided by Project Energize to help these needs.

> We have a perceptual motor programme especially for our 5 year olds because what we had been noticing is that more and more children are coming in with deficits in their physical skills. (Principal 17, urban school, decile seven)

A third theme to emerge in relation to perceiving a need in the community was school climate.

5.2.3 School climate

Perceiving a need in the community is directly related to school climate. Schools that fostered a culture of care, trust, empowerment and support demonstrated a higher level of engagement and participation in Project Energize. This climate was evident amongst a range of deciles and focused on the promotion of healthy eating and physical activity as part of the schools' holistic approach to health and wellbeing. Some low decile schools assisted poor families to improve their intake of healthy food in an effort to improve community wellbeing. This was done by providing community gardens so that these families were able to access fruit and vegetables, food that they may not normally be able to afford. Making food freely available to students and families sent a strong message to their community that they care. Perceiving the need and then assisting with the provision of resources and skills was a characteristic of several schools serving low decile communities.

> We do not sell our garden products! We pick out of our vege garden and we say very clearly that we are growing for our community. We advertise in our newsletter that the lettuces, silverbeet and parsnips are ready. The parents and community can help themselves. We consider this successful! (Principal 22, rural school, decile one c)

Several of the highly engaged schools believed that nutrition and physical activity was just as important as the numeracy and literacy components of the curriculum. Equal priority was given to both these areas despite curriculum demands. This school leader

explained that although it appeared there had been many disruptions to the planned curriculum school due to "outside-school" sports events, students benefited greatly from these experiences and it was important that they participate. Belief in the importance of physical activity was a major factor influencing this school's participation in Project Energize.

> As a school definitely we prioritise physical activity. All these activities coming in, the odd teacher may say, "Do we need to do this? This is another disruption to my programme". I say, "What do you mean it is a disruption, let the kids catch up. Don't let it interfere with your programme". (Principal 14, rural school, decile nine)

Perceiving an educational, health or social need was not the hallmark of all schools.

5.2.4   Schools that did not perceive a need

Some schools did not perceive a school community need. They felt that issues of obesity and over-weight were not significant problems in their schools and that responsibility for children's physical activity and food choices lay with parents. This was more noticeable in high decile communities where parents were seen to take responsibility for ensuring their children participated in a wide range of after-school sport.

> We don't have a lot of children who are not actively engaged in school sports, inside and outside of school. In our school we don't have obese children. We might have bigger children but it is not a trend here. When we did the survey last year, out of 185 children there were only 22 children who did not participate in out-of-school sports. (Principal 11, rural school, decile ten)

High decile school communities, by definition, have the lowest proportion of students from low income and socially deprived families (Ministry of Education, 2008). Socially deprived families find it more difficult for the parents to provide healthy food choices (Utter, Denny, et al., 2006) and pay for extra-curricular sport for their children.

5.2.5 Summary

Perceiving a need in the school community was a theme central to schools engaging in Project Energize. Where schools perceived a substantial need (physical, health, social, economic and educational) and recognised Project Energize's potential to respond to those needs, the level of engagement and participation in the programme was high. Schools that did not perceive a need in their community demonstrated lower levels of engagement and participation in Project Energize.

5.3   Theme 2: Commitment from school leaders to Project Energize

Commitment from school leaders is defined as the demonstration of leadership and commitment to the goals and aspirations of Project Energize. Effective leadership in this regard involved those with positions of responsibility influencing and guiding in the direction of Project Energize. School leaders included the principal, deputy principal or teacher in charge of Project Energize. These people inspired and galvanized teachers, secured the support of Boards of Trustees, then empowered and engaged students, and motivated parents. The overall result was higher levels of participation and programme success. Commitment from school leaders grew from a deep knowledge and understanding of the school community's health issues, a belief in the project's power to address school needs and initiate substantial long-term change, and the schools' willingness to change. This commitment required determination, pragmatism, boldness and resilience. Committed leadership was most evident in schools where despite challenges (socio-economic, lack of parental knowledge and skill, fundraising requirements, curriculum constraints) every effort was made to implement and support the Project Energize programme.

5.3.1   Values and beliefs underpin committed leadership

In one school, committed leadership was evident in an enthusiastic and effective deputy principal who inspired and generated a passion for the programme in her students. This school leader saw her initial task as winning over her students to the value of a healthy eating programme. Central in this campaign was instilling within her students a belief that healthy eating was not just a "fad" or an inclination: it was a "cause". Extolling the virtues of this cause fostered within her students a fundamental sense that taking up the challenge of Project Energize was laudable. Like any grassroots social campaign, Project Energize would result in community transformation and self-empowerment. The tangible evidence for that was the securing of considerable funds with which to establish a new school kitchen from which affordable healthy food could be prepared and sold.

> We had a student nutrition team that I worked with when I first started. And we wanted to create a healthier place to prepare food because we didn't have a kitchen and the kids (24) got involved in doing it. I said to the kids on the team

> "actually, you have to believe in this, you actually have to believe Healthy Eating (HE) is important, you have to believe this cause is worth it. They actually managed to secure $24,000 for a new kitchen". (Deputy Principal 23, rural school, decile two)

Commitment from school leaders was demonstrated by a committed principal who boldly upheld healthy eating principles at a provincial inter-school sports event. This principal's display of leadership stemmed from her commitment to Project Energize and her desire to see its values upheld. As a steadfast believer in the relationship between health and education, this principal was motivated to create a new standard for food and beverage consumption at social events. With the support of the parents, this school leader took action to remind her professional colleagues that "there was no exception to the rule". Such action took courage and a sense of responsibility.

> We went to a softball tournament and I sat my children and parents down and said "Look there is a dairy here. Yes, it does sell lollies, yes, it does sell coke etc. but you will not be buying them because this is a school day and we believe in being healthy. [ ] I think there is no exception to the rule. You put your stake in the sand and you stick by your morals and beliefs because actually it improves student learning and if that is what we are about and that is what all schools should be about in NZ, you cannot allow them to eat rubbish food. (Principal 5, rural school, decile five)

School leaders who believed they have the power to make a difference and who were prepared to be bold, were the ones that effected the most change. This was demonstrated by the Principal of a rural decile 1c (lowest ranking), predominantly Māori school, who set about changing the school environment (food, social, health). High expectations and a vision for a healthy community motivated this principal to organise the school community to plant a huge vegetable garden and fruit orchard. Over the course of 3 years this principal and her colleagues succeeded in transforming the school from a "ghetto" into a successful school centred on community. Despite being a low socio-

economic community this principal felt she had empowered the community to take action to resolve some of the economic and social issues facing his/ her community. Effective leadership helped achieve positive change in this community.

> The garden has not been vandalized as people predicted it would be. It has been cared for by the community and it has been a great gateway for people to feel comfortable coming into the school. It has been very successful. As well as helping our own children to develop life skills-feeding their families from low socio-economic groups, - it has also been great community interaction. (Principal 22, rural school, decile one, c)

The belief of school leaders that it is possible to engage high-risk students and families motivated a deputy principal and the school Energizer to commit to an individualised programme for "most at-risk kids". They reported that the Energizer leading these boys in a whole range of physical activity programmes and cooking sessions had resulted in the successful reach of families. This small tailored programme, based on relationship building, was successful in reaching the parents of students who "normally never feel comfortable about attending school-based functions". The individualised programme was praised by the Education Review Office (ERO) for its success. Committed school leadership and an effective Energizer were underlying factors in the development of this programme.

> It is those personal projects, those little groups where you can have a lot of interaction with parents. OK, it is only 8 kids but out of those 8 kids they are the "most at-risk kids". You need to look at it in terms of long-term health and they are the kids that are going to rob you blind if they haven't got money or they haven't got skills to get a job. There is a whole raft of social factors that [Energizer name] did with the Whānau-ora group to break down those barriers. (Deputy Principal 23, rural school, decile two)

With any new programme there are always challenges to implementation and sustaining the programme.

5.3.2 Challenges to committed leadership

Commitment to Project Energize's philosophy was often tested when it came to fundraising. The decision to choose cost-effective fundraising options rather than healthy alternatives was made by a number of schools, regardless of decile. This financially expedient decision was made because of a shortfall in the government funded "school operational grant" and the ease of the low cost/low value food-based fundraising methods. School leaders who displayed a strong commitment to Project Energize were staunch in their decisions to only fundraise using initiatives that supported the healthy eating philosophy of Project Energize.

> Our sausage sizzles have virtually disappeared. We would never do the chocolate or lollies. All of that has gone so… our biggest fundraiser is a run- a-thon, 30 minutes and they do laps and get sponsored. (Principal 1, rural school, decile five)

This contrasted with the view of school leaders who were prepared to fundraise using "not quite healthy" fundraising options in order to make up for a funding shortfall. The constant demand for fundraising meant that some school leaders chose unhealthy fundraising options because it guaranteed them a steady income.

> We have a sausage sizzle once a week and it is one way to get funds and we struggle to get funds. So we are refusing at the moment to do away with that. (Principal 26, rural school, decile three)

Committed leadership was barely observed in schools where the principal's interest, enthusiasm and vision for the programme were lacking. This was the case in a small number of schools and was due to a range of reasons: disagreement with the way the healthy nutrition messages were being delivered, not perceiving a need in the school community and insufficient understanding of the Project Energize programme due to insufficient Energizer time.

For example, a difference in attitude was evident in one school where the principal felt that the programme was "too black and white" around nutrition. This principal agreed with the fundamental principles of healthy eating at school, but felt it was inappropriate for schools to "dictate" eating patterns for children. This principal believed it was the right and the responsibility of parents to decide what their children ate. This contrasting view affected the way the school supported, engaged and participated in the Project Energize programme.

> Project Energize needs to change their attitude around nutrition. We are a school that likes to work from a strength based position. We are not a school that enjoys being judged and I think around the nutrition there was [judgement]. (Principal 3, rural school, decile three)

Commitment to Project Energize in some schools was constrained by other school priorities. For example, an Area School consisting of five separate divisions found it difficult to establish a school-wide vision "because each part of the school is full on with its own priorities." The school leader spoke of the ease of achieving the Project Energize goals in the junior school where the individual classroom teacher was responsible for the day-to-day curriculum. More difficulties were experienced in the senior school where teachers taught a large number of students and were burdened with "department responsibilities".

5.3.3   Summary

Commitment from school leaders was a theme that characterised schools with high levels of engagement and participation in Project Energize. Highly engaged schools had a principal, deputy principal or lead teacher, who was passionate and committed to the Project Energize programme. These school leaders were prepared to be bold and courageous in order to uphold the principles of Project Energize despite challenges. Committed school leaders worked towards achieving positive change in their community, whereas less committed school leaders were more prepared to compromise the programme.

5.4 Theme 3: Willingness to change cultural mores in order to meet the philosophy of Project Energize

Willingness to change cultural mores was a factor associated with high levels of engagement and participation in Project Energize.

Willingness to change cultural mores is defined as a school's willingness to take action in order to effect substantial change in the cultural, health, physical activity and/or healthy eating environment of the school. It involved the school leaders deciding that accustomed behaviours were no longer acceptable, and changes needed to be made for the wellbeing of the community. Recognising the need and then working collaboratively with Project Energize to set up suitable initiatives were crucial steps in the willingness to change process. Schools which adopted a strong willingness to change cultural mores ethos pursued initiatives enthusiastically despite barriers (e.g. family resistance, fundraising, demands of National Standards). Initiatives included a Whānau-ora programme for at-risk boys; community kitchens to up-skill students and their families, "Boot Camp" to motivate and train students and teachers in physical activity; community gardens, 'healthy food only' canteens, and a drug and alcohol programme.

5.4.1 Willingness to change school food environment

Many schools exhibited a strong willingness to change cultural mores and attitudes when they recognised that the school food environment was unacceptable and that it had to be changed. Food that no longer met the nutrition standard was removed in favour of healthier alternatives. This involved a school-wide approach including changing canteen food, fundraising, food served at school events, and encouraging healthier food brought from home. This approach resulted in an improvement in food intake, work output, nutrition knowledge as well as spreading the nutrition messages to families. This was shown in this urban school where the cultural norm changed from eating pies and cookies to eating filled rolls and sandwiches. Enthusiasm for the change was supported by the students and their families, indicating that a cultural shift was occurring.

> We used to have a canteen which was crap. i.e. big cookies, little cookies and noodles etc. That has gone. We have completely changed the food aspect of the school. (Lead Teacher 20, urban school, decile four)

A willingness to change cultural mores and attitudes came through in the actions of a principal who decided to take a stand against the heavy consumption of high fat, high sugar lunches. The principal took the bold step of inspecting lunchboxes, despite the risk of offending parents, in order to effect a change. It took the courageous actions ("I wondered how it would go with parents") of the well-respected principal to make a difference to the food intake of her students. This principal realised her willingness to change cultural attitudes, and actions enabled her to guide and influence the eating patterns of her small rural community.

> I am sick of seeing day after day lunch boxes full of junk: packets of chips, cheezils and those roll-ups and muesli bars. I am putting my foot down! I only want to see one packaged item at the most per day. I want to see sandwiches every-day. I want to see one piece of fruit and one dairy type food every day. For about six months now, most mornings I say 'pull out your lunch boxes. I want to see your lunchboxes'. It has really, really worked. The parents have come back to me and said, 'thank you [Principal's name]: they won't do it for me but they will do it for you'. (Principal 19, rural school, decile three)

This situation contrasted with the observations of a principal, who, although thoroughly committed to Project Energize, made the strategic decision to focus on the physical activity part of the programme. She made the comment that despite curriculum focus, "childrens' lunch boxes were still unhealthy". This suggests that a "willingness to change" attitude needs to be accompanied by boundary setting as well as education.

5.4.2 Tailoring the programme

The willingness to tailor the Project Energize programme to meet the needs of the community has been a feature of the willingness to change cultural mores theme. Based on a Project Energize needs assessment and in consultation with the school community, individualised programmes were designed. This was shown in one school where "Boys and Blokes" cooking sessions were organised for the new "Whare -Kai" and a culturally specific "Tapuwai tournament for Matariki arranged to bring in those people who sometimes may not want to be associated with the school".

These initiatives stemmed from a willingness to improve Māori families' participation in school based activities at a time when families were under represented at school-based events. Tailoring programmes to engage Māori families was seen as a positive step towards changing the cultural mores of physical inactivity and unhealthy food choices. A strong willingness to change cultural mores resulted in schools planning individualised programmes with Energizers to help address social and health issues. Identifying a need, accompanied by a willingness-to-change attitude, and an effective programme, contributed to improved health outcomes for the participants of this individualised programme.

> M [Energizer] got us started on Boot Camp last year. My fitness is a problem. So there was myself [Principal] and 11 children. We selected children, more senior school, who did not enjoy sport and M [Energizer] trained us. We put it in the newsletter. We went biking and walking, running, and we did Zumba. It was fantastic! [ ] We had fitness tests and we had all improved. (Principal 24, rural school, decile three)

5.4.3   Community change

A willingness to change cultural mores to meet the philosophy of Project Energize comes from raised awareness, education and commitment. This was shown in a low decile, Kurakaupapa School where the cultural norm was to drink fizzy, eat pies and fish and chips. As a 100% Māori community, this principal felt she had a responsibility to encourage change. The Project Energize programme raised an awareness of the benefits of eating of healthy food and this prompted the school to change its attitude to the type of food, that could be brought into the school. This resulted in setting boundaries and enforcing standards with students, parents and extended family, with whom poor eating patterns were firmly established. This principal promoted sandwiches and fruit as healthier alternatives to what was previously consumed.

> We tell them "no, don't bring pies and fizzy in [to school]". We are not pushy but we are aware. If the kids see fizzy they say, "Mum we are not allowed to bring in fizzy. (Principal 13, rural school, decile one)

5.4.4 Enablers to change

A significant enabler in effecting change in schools has been the Fruit-n-Schools and the Kick Start Breakfast initiative for Decile 1 and 2 schools. Principals explained that for many children this would be their only intake of fruit and vegetables and for some their only nutritious food. Several highly engaged schools, though not eligible for Fruit-n-Schools, spoke of enterprising schemes used to provide fresh fruit for their students.

> For some of them we know, without Breakfast Club and without Fruit-n-Schools, they would be for one starving, and two, they would have nothing healthy. (Principal 26, rural school, decile three)

> We are doing really well here thanks to "Fruit-n-Schools". We had kids who couldn't name any fruit before we started. They would look at you and say what is that? Now they know them, they eat them. (Deputy Principal 18, urban school, decile one)

> We are not a decile 2 school, so we don't get "Fruit n Schools". We have a case of apples sitting in the classroom at the moment. We went and picked apples at a local farmer's garden. (Principal 19, rural school, decile three)

5.4.5 Challenges to change

A weaker willingness to change cultural mores was shown by one principal's reluctance to upset "finicky" parents. She felt it was not her place or the place of the school to set healthy eating policies despite noticing "that some children still have unhealthy lunch boxes." She implied that her decile 10 parents could easily be offended if healthy eating guidelines were imposed by her school. This attitude affected this principal's willingness to change cultural mores in her school.

5.4.6 Summary

Willingness to change cultural mores was a pivotal factor associated with high levels of engagement and participation in Project Energize. Having perceived a significant need within the school community, schools that demonstrated a strong willingness to change

cultural mores worked collaboratively with the Energizer to set up initiatives to address identified needs. This often resulted in schools challenging previously held cultural values in order to ensure programme success. A weaker willingness to change cultural mores generally meant schools were not prepared to challenge cultural norms associated with food and physical activity, and as a consequence these schools tended to be less committed to achieving the Project Energize programme goals.

5.5 Theme 4: Effective relationship with Energizer

Having an effective relationship with the Energizer was shown to be an important factor contributing to high levels of engagement and participation in Project Energize. It involved a collaborative relationship based on shared objectives, mutual respect, trust, and professionalism. The enabling factor in developing an effective relationship was having a multi-skilled Energizer who connected positively with teachers and students, who worked with the school to identify needs, and who provided high quality resourcing. Regular contact with an effective Energizer kept the programme alive and moving forward. Having a relationship with the Energizer meant school personnel had access to professional development and programme support. This resulted in improved teacher knowledge, confidence and motivation.

5.5.1 Effective interactions with Energizer

Having an effective relationship with the Energizer was acknowledged by all school leaders as being very important. It was the strength of the Energizer-school relationship that underpinned the success of the programme. In the case of principal 8, decile one, the school's first Energizer experience was "dismal" but "as soon as we got a really good Energizer, it flowed." Having a low-calibre Energizer initially meant that this school had a negative view of the programme and was unwilling to proceed, unless the Energizer was changed. After a positive long-term experience with the school's Energizer, this is what the principal was able to say.

> The best part is someone like, P [Energizer] coming into school keeping you true to your values, following you up, encouraging you, motivating you, and providing resources. So it is always in your face, it just doesn't get lost in the stuff, and it is always there. What matters is that she is there if you have a need. She re-energizes the staff, motivates staff. (Principal 8, urban school, decile one)

Establishing a supportive and collaborative relationship with the Energizer assisted some school leaders to address issues of social importance. These school leaders spoke of the courage and reassurance gained from having a professional to guide and support

them when challenging situations arose. Having an experienced "ear" was considered invaluable.

> Their [Project Energize] model is great. It is nice when you are taking 'the high road' as I call it, that you have the back up of other people. (Principal 5, rural school, decile three)

Developing a long term relationship with an Energizer played a significant role in assisting schools to achieve the goals of Project Energize. The long term association enabled schools (students, teaching staff, Board of Trustees, parents) to develop a professional relationship based on trust, friendship and collegiality. As one principal reported, their five year relationship "unlocked opportunities" and "provided wonderful support". This contrasted with one school that had been in the programme for eighteen months but made little progress to achieving the programme goals. Insufficient Energizer "dose" may have affected this school's lack of participation in the programme. As a decile seven school it received less Energize time than low decile schools, and this combined with a change in Energizer may have combined to reduce the relationship with Project Energize. A recent change in Energizer resulted in the school leader feeling more optimistic about the future of Project Energize in his school.

> S[…..] is our new Energizer. She is on to it, um so I think it is getting better and better all the time. Sonja has re-focused us and seems to be "right on the money. (Principal 7, urban school, decile seven)

All schools, regardless of decile or locality, spoke positively about their Energizer relationship and the changes that the school had achieved. Schools that were highly engaged viewed their relationship with Project Energize as a partnership sharing the same vision for improving the health outcomes of children.

> The Staff has been behind the whole concept! That has got to do with a couple of factors. That has had to do with the Project Energizer, and it has had to do with leadership. If you have your teaching team and your leadership heading in

the same direction as the Project Energizer is heading then you have a recipe for

that will fly. (Principal 21, rural school, decile five)

This collaborative partnership was shown to be associated with a school's willingness to try new initiatives and continue with those initiatives independently year after year. These schools looked upon their Energizer as "staff" and involved them in physical activity and healthy eating curriculum planning. When asked changes that had occurred as the result of Project Energize, this school leader responded with,

We didn't have gardens. We didn't have healthy food options and we didn't

do athletics. The way we do PE., that has all changed. Project Energize sat

down with us and looked at our PE programme for the year and support us in

that. They show us the better way of doing things. (Lead Teacher 20, urban

school, decile four)

When the school leaders were asked whether the programme would work without the Energizers, all the schools agreed, the Energizers were critical to the programme's success and that the programme would not work without them.

No, it [Project Energize] can't. Because that is the whole reason it has been

successful, because of the close repartee that has existed between the school

and the Energizer. (Principal 6, urban school, decile six)

In order to maximise the programme for Māori and Pacific children the programme was sub contacted to Māori and Pacific partners allowing the programme to be tailored to meet the specific needs of schools and community.

5.5.2   Māori health providers

In predominantly Māori schools, the programme was enhanced when the Energizers were either Māori or the programme was managed by Māori health providers such as Te Korowai Hauora o Hauraki. The Māori health providers tailored the programme to meet the needs of the community and delivered the messages in a holistic, culturally appropriate manner. These Energizers provided a cultural distinction that "reached out

to Māori students" and encouraged high levels of programme participation. Participation and engagement was further enhanced in Kura Kaupapa schools with the provision of Te Reo teaching resources. The provision of appropriately trained Energizers who understood the needs and wants of Māori heightened the success of Project Energize in Māori communities.

> Our school also did the catering for a Whānau -fun day which was run by Te Korowai [Māori health provider] and P… [Energizer] from Project Energize and a dietitian from Te Korowai. They took years 7 and 8 [students] through a food safety course and from that they have cooked hamburgers every Thursday at school. They [students] raised enough money for end of the year camp. (Principal 22, rural school, decile one)

> These teaching resources had been translated into Māori. This is good" (Principal 13, Kura School, rural school, decile one)

This approach of working through schools and communities was welcomed by both teachers and children.

> They came in and did traditional Māori games. Those things really reached out to our students. (Principal 22, rural school, decile one)

5.5.3   Summary

Having an effective relationship with an Energizer was a critical factor associated with high levels of engagement and participation in Project Energize. This relationship based on collaboration, empowerment, respect and trust supported schools to change their healthy eating and physical activity environments. Schools with a reduced relationship with an Energizer (due to an ineffective Energizer, or differing views) were less likely to totally engage with the Project Energize programme.

5.6   Theme 5: Future proofing in order to sustain Project Energize

Future proofing is defined as the steps and procedures taken to safeguard changes made as the result of Project Energize. Future proofing involved making Project Energize a priority in the school and was a common theme in engaged schools.

Future proofing took the form of either including Project Energize as a part of the school's strategic plan or embedding the principles of healthy eating and physical activity in school policy (either written or unwritten expectations). Once a part of the schools long-term planning, progress was able to be measured, evaluated and reviewed. Future proofing procedures demonstrated commitment to the on-going framework of the programme, with the long term objective of Project Energize being able to stand alone should the District Health Board not renew the contract.

5.6.1   Sustaining Project Energize

All schools were in agreement that Project Energize support was needed to implement sustainable healthy eating and physical activity changes. Schools that included Project Energize in their School Charter or Mission Statement sent the strong message to the school community that the goals and aspirations of Project Energize were valued. As one principal explained,

> I think you need to make it part of your charter, make it part of our strategic goals, which we have done, and make it something that we report on so that it becomes a cultural shift. And just like any cultural shift you have to put in the sustainability stuff. Like go back and revisit it. How are we going? Do we still believe in this? Do we still value it? If we do value it, what are we going to do to ensure that it happens? (Principal 5, rural school, decile five)

Having the goals of healthy eating and physical activity firmly entrenched in school policy meant that these goals were unlikely to be disregarded over time.

> It is now in our system, it is not just a tack on. It is something that [name of school] believes in. I think it is in our vision and mission statement, in our charter. (Principal 2, rural school, decile five)

One committed school leader spoke about the long-term commitment needed to change eating habits and physical activity patterns and that on-going political support (in the form of continued funding for the programme) was needed if positive change was to be sustained.

> I often say that these changes will take a long time. The kids don't do the shopping and they don't provide what is in the fridge, they don't do the cooking. It might just have to be a whole generation change [......] I think we will have to wait for these kids to grow up and become the people who buy the bread. (Principal 19, rural school, decile three)

5.6.2 Factors impacting sustainability

School leaders of low and medium engaged schools gave less consideration to future proofing in order to sustain Project Energize than their more engaged counterparts. These schools were at different stages e.g. Pre-contemplation, Contemplation, Preparation or Action Stage based on The Stages of Change model proposed by Prochaska (Sigman-Grant, 1996). According to this model, low and medium engaged schools are not ready to think about future proofing. They are at a stage where they need significant support, education and professional development in order to become self-sustaining. As one school leader explained, while Project Energize was actively present in the school, the school supported it, but if the programme were to cease, "it would get pushed to the bottom of the pile" as other priorities took precedent.

In summary, schools that took steps (strategic planning, written and unwritten policy and procedural expectations) to protect the changes made as the result of Project Energize were associated with high levels of engagement and participation in the programme. Few medium and no low engaged schools considered future proofing, because neither was ready, prepared, or able to offer the programme without significant Project Energize support.

The final theme that emerged from the open-ended questions was challenges to programme implementation.

5.7   Theme 6: Challenges to implementing Project Energize

Interviews highlighted a number of challenges that directly or indirectly impacted on levels of engagement and participation in Project Energize. These included a lack of time, other school priorities, insufficient Energizer time, high roll turnover and socio-economic problems within the school community.

5.7.1   Time

Thirteen of the twenty-five school leaders felt that an "overloaded curriculum", "insufficient time", and the demands of National Standards were barriers to achieving school-based Project Energize goals. When asked how difficult it was to encourage a minimum of 20 minutes daily physical activity, this decile 1 principal responded with

> In some ways that is difficult. Children certainly do it at morning tea and lunch. Fitting it [physical activity] into the curriculum. The curriculum is overcrowded. Some teachers do it every day but not all teachers.

Several Principals spoke of work load issues required to complete the National Heart Foundation Healthy Heart Award for Schools and their decisions not to apply for the award even though they felt their schools would qualify.

> This is more about paper, whereas some of the other stuff that we have done is more tangible, more hands-on and practical, more likely to make a difference. (Principal 21, rural school, decile five)

Insufficient Energizer time: Several school leaders spoke of insufficient time with the Energizer and competition with other schools for his scarce resource.

> They [the Energizers] have to make time for you. They are in demand due to their own success. We want to see them more and so do the other schools. So it creates its own limitations. (Lead Teacher 16, rural school, decile nine)

5.7.2 Differences of opinion

A small number (four out of twenty five) schools did not agree with the Project Energize approach to nutrition, and that affected the way the school implemented that part of the programme. Statements from principals included,

> You can't policy that. That is a parent's right. (Principal 11, rural school, decile 10)

> Some people, some of our "Home and School" people, some of our Board people and some of our staff have thought it is a load of [.....] left-wing PC crap. If I want to eat a pie I bloody well will. (Principal 12, rural school, decile five)

5.7.3 Lack of support

A lack of commitment from teaching staff and parents: some school leaders spoke of a small number of long serving teachers who were reluctant to change their teaching programme despite Energizer input. These teachers were unenthusiastic about devoting curriculum time to healthy eating and physical activity.

A lack of parental support to attend Project Energize information evenings was mentioned by a number of principals from low socio-economic schools. A common complaint by school leaders was that these evenings were attended by the "converted" parents. One school leader explained the situation in the following way.

> Some parents we would never ever see. We would see them at an interview if we were lucky. We don't want to blame parents it is just very, very hard to engage parents. [ ] school is not a safe place-I think parents have bad memories of school. (Principal 18, urban school, decile one)

5.7.4 Lack of parent knowledge and skill

Another significant challenge raised by school leaders was lack of parent nutrition knowledge and food preparation skills, particularly in low socio-economic areas. A lack of these skills made it difficult to provide healthy food choices for their children

We have taken parents on camp and they have no idea how to cook a meal.

They have never done it so if you don't know how to cook a meal how can you

[do it]). So, a lack of knowledge and skill on behalf of the parents [is a barrier].

(Principal 25, rural school, decile three)

5.7.5 Family transience

Family transience was raised as a challenge. When asked whether parents supported the healthy eating and physical activity changes in her school, this decile four school leader responded by saying

Mostly! The trouble is we have a third of our school come and go every year so

that makes it tricky.

5.7.6 Cultural norms

School leaders from all deciles spoke of the on-going issue of high fat, high sugar packaged foods being sent to school as part of the school lunchbox. Several school leaders spoke of having to supervise and monitor lunches in order to restrict consumption of unsuitable foods.

5.7.7 Inequality

Poverty is associated with poor health, and according to research findings it is associated with high need deciles and ethnicity (Ministry of Health, 2009b). The impassioned words of this Deputy Principal summarised the issues facing some parents from her low decile school.

They try. They try! They are not out there to make their kids fat, they are not

out there to detriment their health. They are not out there to do that [….]

Parents do find it hard to take responsibility for the issues that their kids have.

(Principal 23, rural school, decile two)

5.7.8 Financial challenges

For low income families the provision of healthy food is a constant challenge, let alone having sufficient money to provide for sporting and other activities. Several low decile principals spoke of providing breakfast and lunch for some of their students.

> Parents can't afford healthy food" and "we still have problems with some of our low income families being able to afford to get their children into sporting activities. (Principal 21, rural school, decile five)

A comment was made by one principal that low decile communities were a 'magnet for take-away shops" and having fast food stores centrally placed in poor communities made it very easy for people to consume high fat food rather than healthier, more expensive foods. Having affordable, readily accessible nourishing food is a key factor in assisting people to make health-giving food choices (Utter, Denny, et al., 2006).

5.7.9 Fundraising

A shortfall in Ministry of Education funding meant that schools needed to fundraise. Finding cost effective fundraising initiatives that upheld the philosophy of Project Energize was a challenge for many school communities. Many schools chose to ignore the healthy fundraising guideline in favour of traditional "money guaranteed" fundraising methods such as selling chocolates, biscuits or running sausage sizzles. These school leaders recognised the conflict but were still seeking workable solutions for their schools.

5.7.10 Wet weather spaces

A lack of wet weather spaces for playing games and engaging in physical activities was mentioned by a small number of school leaders. This was a major problem during the winter season when it was too wet to go outside and involve the students in physical activity.

A number of barriers to programme implementation were discussed. These barriers included a lack of time, high roll turnover, insufficient Energizer time, school-type, a lack of parental knowledge and support, and financial hardship. Where these factors occurred, extra effort and commitment was required by the school. Where a number of these factors existed in combination, programme participation was comprised.

5.7.11 Summary

Six major themes emerged from face-to-face interviews with the principal, deputy principal or lead teacher from each of the 25 schools. These were: perceived need of the school community; commitment from school leaders; willingness to change cultural mores in order to meet the philosophy of Project Energize; having a substantial relationship with Energizer; future proofing in order to sustain Project Energize; and willingness to try to overcome barriers. The perceived success of each school in the program appeared to be proportionate to its capacity to harness these themes. The most positive school leader perceptions results were found in schools that perceived a need in the school community, had a committed and passionate leader who believed in the programme's ability to effect change, were willing to change cultural mores, established a substantial relationship with the programme Energizer and gave consideration to future proofing. The least successful schools failed to achieve in a number of these areas and as a consequence demonstrated lower levels of engagement and participation in Project Energize.

Figure 6 below shows a diagram of the key factors and five themes associated with engagement.
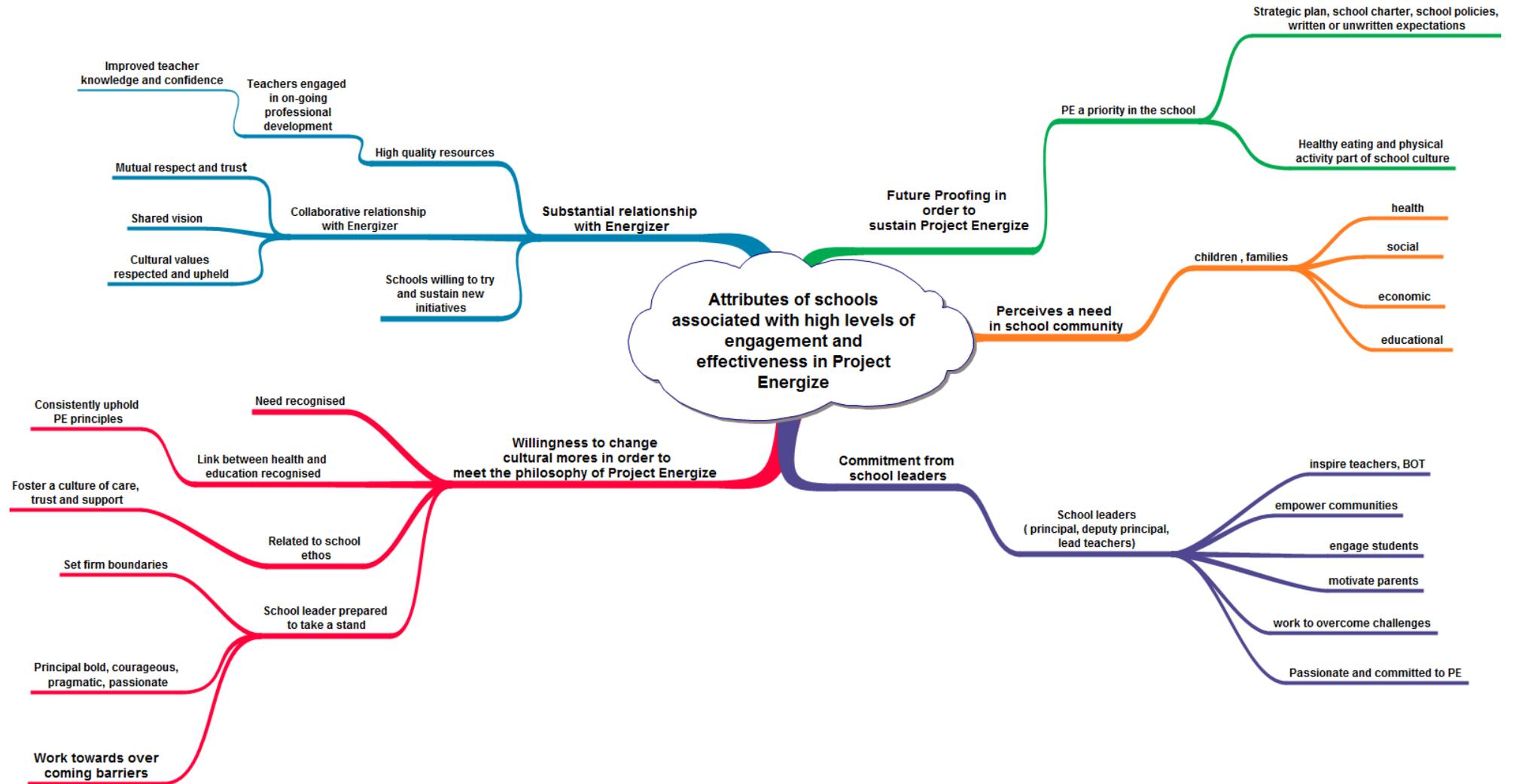
Figure 6: Attributes of schools associated with high levels of engagement and effectiveness in Project Energize

Chapter 6 Discussion and Conclusion

This chapter provides an explanation of the key research outcomes presented in the two previous chapters. In relation to previous research studies, the first section provides insight and understanding to the context of these factors associated with participation and engagement of schools with Project Energize. From these results a model for engagement is presented. The second section provides a practical guide of what aspects of the programme were perceived to be working well with some suggestions for further programme enhancement. The third section includes strengths and limitations of the study and concludes with recommendations for future research. The final section discusses the big picture, including policy changes that need to occur in order to support programmes like Project Energize that are working to reduce health inequalities that exist between different groups of New Zealanders.

6.1   2011 Project Energize evaluation findings

The 2011 formal evaluation of Project Energize demonstrated that the programme has been successfully implemented in the school environment. The majority of measures showed favourable changes for Project Energize children, including European and Māori, and children from low decile schools (Rush, Graham, et al., 2011). Compared with historical controls, growth appeared to have slowed, improvements were observed in aerobic fitness, and knowledge of, and attitude to healthy eating and physical activity were good. Schools reported that they continued to make changes to in-school nutrition and activity policies to align them with the goals of the Project Energize programme. The evaluation report provided evidence that for an investment of $40 per annum per child (or 20c per child per day); positive returns could be expected, especially for Māori children. High levels of participation by teachers, children and parents, caregivers/whānau were observed in the 2011 formal evaluation, providing evidence of commitment to, and partnership with the programme.

The success of Project Energize is attributed to several factors. The programme uses a combination of physical activity and food strategies to improve student health. Previous reviews and analyses have shown these strategies to be the most effective intervention method for preventing unhealthy weight gain in children. The Energize programme design has focused on the development of practical skills and enjoyment rather than the dispensing of information. This is consistent with Contento's (2008) research which states that the most effective method of delivering nutrition programmes involves skill

development. The Project Energize programme is modelled on the principles of the Ottawa Charter (World Health Organisation, 1986), and the Treaty of Waitangi guiding principles of participation, protection and partnership (Durie, 1999). These principles have helped to enhance Māori and Pacific Island participation in the Energize programme. The first principle of participation has involved Project Energize partnering with community-based health providers to employ Energizers to deliver the programme and consult with families/whānau in order to identify needs, strengths, resources and barriers to increased physical activity and healthy eating for children. The second principle of partnership has concentrated on fostering links with multiple supportive agencies that have an interest in supporting student physical activity and healthy eating practices. Building collaborative school-community relationships with service providers was a key factor identified in achieving programme success in an Australian study (M. Thomas et al., 2010) of five secondary schools participating in the Logan Healthy School Project. In an earlier Australian study (Marshall et al., 2000) of 27 schools, the failure to form effective collaborative relationships limited programme effectiveness. These findings support the Project Energize model of building collaborative school-community partnerships in order to improve engagement and effectiveness in the programme. The third principle of protection has been followed by ensuring that low decile schools with a high percentage of Maori students, receive extra programme resourcing and support.

6.2   What this thesis adds

This body of work has presented evidence from the school stocktakes and the Energizers' perceptions that the majority of schools are well engaged with the Project Energize programme and that it is working for most schools.

The information obtained from the face-to-face interviews validated the engagement ratings of the Energizers. There was less agreement between the interview score and the school stocktake score, and between the school stocktake score and Energizer score. An explanation for the lower agreement is the different foci of measurement tools used to assess engagement. For example, the physical activity questions selected from the pre-prepared school stocktake questionnaire related to school-based physical activity policies and practice, whereas four of the six physical activity questions relating to the programme goals in the school leader interview focused on home-based physical activity. The difference in question foci meant that school leaders were going to respond differently to the questions, which would affect the level of agreement between the

school stocktake score and the interviewer score. In comparison, the criteria used by the Energizers to assess engagement focused on school attitudes and practices, while the interview score was calculated using weighted programme goal scores as well as weighted themes perceived to be associated with engagement. Each measurement tool was based on individual perceptions, such as perceptions of the school leader and how such leaders perceived their success in the Energize programme, the Energizer's perception of each school relative to other schools, and the researcher's perception of the schools based on a snap-shot of the schools interviewed. Overall there was positivity between the three measurement tools, and all the scores were skewed to the right, but variability could be explained by the different foci of the measurement tools.

The Energizers were reasonably consistent in their measurement of school engagement over time (October 2010 and March 2011 ratings of engagement). This agreement shows that the Energizers' perceptions of their schools' engagement and participation in Energize are reliable and this assessment could be used to inform workforce deployment in future.

The selection of schools for interview was designed to achieve a balance across schools. The programme director purposively selected 25 schools that represented different levels of engagement, rural and urban localities, and different decile ratings. While the 25 schools selected for the interview were similar in profile to the other regional schools evaluated, the group of 25 was weighted towards low decile, and low-engaged schools to achieve the mix of experience with Project Energize. Although no specific studies have examined the relationship between engagement and socio-economic status in school-based health interventions, previous research does provide an explanation for the results. High decile schools have a greater percentage of families with elevated incomes and higher levels of employment (White et al., 2008) which have been shown to be associated with food security (University of Otago and Ministry of Health, 2011). Low decile schools have a high percentage of students from low income families whose families find it more difficult to support children in extra-curricular sporting activities (Hardy, Kelly, Chapman, King, & Farrell, 2010), and to provide more expensive, healthier food choices (Utter, Scragg, et al., 2006). Given that Project Energize is concerned with improving the healthy eating and physical activity components of school and home environments, it is understandable that low decile schools find it more difficult to support a programme that is partially reliant on parents being able to afford nutritious food and after-school physical activity programmes. A reccurring theme in

the school leader interviews was the inability of low income parents to purchase more expensive nutritious food, transport rural children to and from after school sporting activities, and purchase sports-related uniforms and equipment. Low decile schools find it more difficult to engage and meet the goals of Energize because they have other needs and priorities (Belansky et al., 2009). Competing school pressures have been shown to impact a school's ability to implement government-directed healthy eating and physical activity policies, as shown in a study of 45 rural, low income elementary schools in Colorado (Belansky et al., 2009). Belansky's study reported that pressures to raise academic achievement, formulate a crisis plan in the wake of recent school shootings in schools, a high turnover of administration staff, and teacher recruitment were major barriers to implementing the government-directed wellness policy, which includes healthy eating and physical activity. The results of this study are similar to the barriers reported by many of the participating school leaders interviewed in the Project Energize 2011 evaluation. One barrier that was repeatedly mentioned was the introduction of National Standards (Ministry of Education, 2010b), and the pressure schools were experiencing to comply with this government directive. Although this study raises different issues regarding schools' ability to implement a health intervention programme, it highlights the fact that schools have different needs and priorities.

The easiest Project Energize goals to implement were the goals associated with the school environment, while the goals perceived as being more difficult were associated with the home environment. This is not surprising considering the present recessionary economic climate and the high number of schools in the Waikato region serving low income communities (Statistics New Zealand, 2006b). As the economic climate has worsened, more low income families have struggled to provide sufficient food for their families (Child Poverty Action Group, 2011). While schools are able to control their school healthy eating and physical activity environment, they have little control over what happens in the home.

Engagement across all Project Energize schools was not significantly affected by school location, size, and time in programme. These findings are in partial agreement with a Canadian study (Deschesnes et al., 2010) which reported that adoption of the regional health intervention programme was affected by location but not by school size. An explanation for the difference in results could be explained by the Project Energize model, which although standardised, is tailored to meet the needs of individual schools.

6.3 Factors associated with high levels of engagement and participation

The study provided insight and understanding about the characteristics and processes associated with higher levels of engagement in the Energize programme. Analysis of the interview transcripts highlighted the six themes identified in chapter five associated with engagement in Project Energize. It was found that higher levels of engagement were found in schools where, regardless of decile, the school leader recognised and prioritised health in the school community, made a firm commitment to the goals and aspirations of Project Energize, was willing to change cultural mores, formed an effective and collaborative relationship with the Energizer, considered and implemented future-proofing measures, and was willing to try to overcome barriers. Discussion will focus on committed leadership, which includes perceiving a need, being willing to change, and future-proofing. It will also assess the importance of forming effective relationships with the Energizer, and programme challenges faced by schools.

6.3.1 Committed leadership

The World Health Organisation (2004) reported that:

> Among the essential ingredients of good leadership is the ability to mobilize institutions and individuals around common goals and give a clear sense of direction, enlisting public and political support for health actions, as well as ensuring the application of common standards.

Characteristics of good leadership needed to bring about change in communities include employing effective communication skills, being able to identify needs and disparities, and taking actions to address them, establishing partnerships with key people in order to achieve identified goals, evaluating actions, promoting accountability, and making sure that vulnerable groups are protected (World Health Organisation, 2004).

This definition sums up the characteristics displayed by several school leaders interviewed in the study. It became apparent that school leaders who perceived a health need in their school community were more likely to commit fully to the Project Energize programme. Commitment from school leaders developed from a deep knowledge and understanding of the health issues, and a belief in the project's power to address school needs and effect considerable long-term change. The importance of strong effective leadership in assisting health intervention programmes is supported by findings from a Canadian study (Deschesnes et al., 2010) of 96 provincial schools in the

Quebec Healthy Schools programme which showed that adoption of the programme was most strongly associated with school leadership, school commitment, and investment in healthy lifestyles, and the belief that health issues could be addressed by collective effort. In a smaller Australian qualitative study, school leadership was identified as a key factor associated with sustaining a health-promoting school approach to improving nutrition in the school environment (Rowe et al., 2010). Rowe's study reported that it was the school leader that played a critical role in engaging students, teachers, parents, and the wider community in the whole adoption process.

This thesis also found that committed leadership was associated with a willingness to change the school food and physical activity environment despite a risk of offending students, teachers and parents. This finding is supported by the Pathways process evaluation findings (Gittelsohn, Merkle, Story, et al., 2003) which found that school leadership influenced school climate, and that this affected a school's willingness to try new health innovations and cope with the challenges that arise during implementation. The study, which involved collecting data over three years from 21 schools involved in the Pathways school-based study to prevent obesity in American Indian school children, concluded that an assessment of school climate could be used to predict programme success for some programmes. Parcel et al. (2003) provided more insights about leadership style from the Pathways study. Parcel's study showed that principals who were perceived to be open and supportive were more likely to inspire their staff to teach more programme lessons, try new curricula, and engage in professional development training than those principals who were perceived to be disengaged from the programme. These findings support the theory from this thesis that school leadership plays an important part in engagement and participation in a school-based health intervention programme.

It has been shown that the adoption of a school-based health intervention is associated with school receptiveness to change. The Deschesnes et al (2010) study showed that programme adoption was associated with being receptive to the benefits and advantages of participating in the programme. Failure to adopt the programme was associated most significantly with perceived contextual barriers which include other school priorities. These findings support the theory that engagement in the Energize programme is associated with perceiving a need in the school community. A comparison of two schools will demonstrate this point. School A, a decile 9 school with 24 terms in the programme, had a school leader who firmly believed in the importance of physical

activity and healthy eating, and was well aware of the benefits of engaging with the Energize programme. School leader A reported many examples of commitment to the programme, including receiving the National Heart Foundation Silver Award for the Healthy Food Schools Programme, implementing physical activity and healthy eating school policies, and adopting a school-wide commitment to the programme. School B, a decile 10 school with 24 terms in the programme, had a school leader who did not perceive a health need in her school community (see Chapter 5.2.4 on page 69) and as a consequence was not prepared to change some aspects of the school food environment that did not comply with the Project Energize philosophy of healthy eating and physical activity (see Chapter 5.7.2 on page 88). This comparison shows how having the belief and support from the school leader can affect programme goal implementation. An American study (Greaney et al., 2007) designed to assess the feasibility of a multi-school physical activity and healthy eating programme found similar results. Greaney et al. showed that programme support was unlikely without leadership support. These findings are further supported by studies that highlight committed leadership (Gittelsohn, Merkle, Mary, et al., 2003; Rowe & Stewart, 2011; Rowe et al., 2010; Yukl, 2008) and school readiness to change (MacDonald & Green, 2001) as important factors in achieving programme success in school-based health intervention programmes. Schools that recognise "a need" are more receptive and willing to engage in programmes than schools that do not perceive a need.

6.3.2   Effective relationship with Energizer

All schools agreed the Energizers were a vital part of the programme, and that Project Energize was unlikely to be sustained without regular Energizer input. In fact most of the schools wanted more Energizer time. The Energizers worked with schools to prioritise need, and develop targeted strategies to meet school community requirements. The overwhelming concern from schools was that without regular Energizer input, the day to day demands of school life could supplant a previous commitment to healthy eating and physical activity.

The findings are consistent with the Ward et al. (2006) study which showed that programme success was enhanced by the use of skilled facilitators to support teacher professional development, and provide high quality programme resources. Although the 'Lifestyle Education for Activity Program' (LEAP) targeted improved physical activity participation amongst high school girls, rather than a combined physical activity and healthy eating approach, the success of the intervention was attributed to the overall

facilitative approach. Similar to Project Energize, the LEAP programme included an appointed school LEAP champion who worked with LEAP project staff to determine school needs, devise suitable strategies, and provide exemplary teaching resources and professional development opportunities (Ward et al., 2006). A review of the literature investigating factors associated with the success of the Health Promoting School and the Comprehensive School Health Programme (Deschesnes, Martin, & Hill, 2003) reported that one of the most important conditions for furthering implementation of school-based health programmes was having knowledgeable and skilled people to plan, coordinate, implement, and evaluate the programme. The Deschesnes et al (2003) review finding supports the participating school leaders' conclusion that the Energize model, which includes the use of trained facilitators, provides the framework to support schools in improving children's physical activity and nutrition. The key enablers identified by participating school leaders were having highly skilled enthusiastic facilitators available to provide high level resourcing to schools, the flexibility of tailored programmes to meet school needs, and the collaborative nature of the relationship between Energizer and schools. Not only does the Energizer deliver the health promotion message, but the Energize team works with a number of partner organisations to provide specific expertise to enhance the programme. The collaborative nature of the programme was recognized in 2009 by the Sport and Recreation New Zealand Project Collaboration Awards (Rush, Graham, et al., 2011). Developing school community partnerships has been shown to enhance the sustainability of school-wide intervention programmes by building more capacity, empowering communities, and building positive relationships (M. Thomas et al., 2010).

6.3.3 Challenges

Challenges to engagement were a perceived lack of parental support, curriculum demands, the perceived need to fundraise with unhealthy food, student transience, and insufficient Energizer time. These results are not surprising given the extensive evidence base documenting barriers and enablers to implementing school-based health intervention programmes. Findings from the Pathways study process evaluation (Steckler et al., 2003) supported this study's finding that insufficient parental support at information evenings was a challenge to programme implementation. Attendance at family events was reported to be 47%, with the lack of lead-in time being cited as the main reason for reduced attendance (Gittelsohn, Merkle, Story, et al., 2003). This contrasts with the reports from the school leader interviews that stated attendance at

traditional parent/whānau information evenings was extremely poor with only a few converted parents attending, but that attendance at events designed to meet pre-determined community needs (e.g. Boys and Blokes cooking classes, Matariki celebrations and Whānau-ora centred events) were well attended. A synthesis of findings (Tsey et al., 2010) from seven formative evaluation reports of an Indigenous Australian family empowerment programme across four settings in Australia's Northern Territory and Queensland supported this study's findings, that insufficient parental support at information evenings was a challenge to programme implementation. The majority of 25 school leaders interviewed reported that time was a barrier in an "already overloaded curriculum" and that there were often occasions when it was difficult for classroom teachers to allow their students 20 minutes of daily physical activity.

6.3.4 Project Energize model for engagement
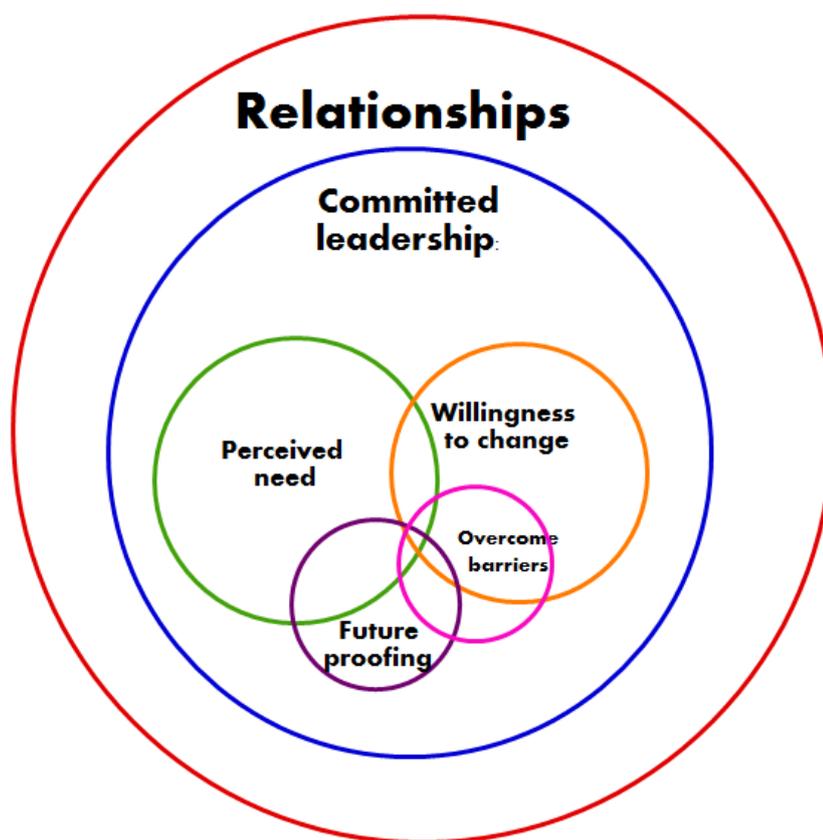
**Figure 7: Key factors underpinning engagement in Project Energize**

Figure 7 above shows the association between each of the major themes. Engagement and participation in Project Energize depends on successful relationships between the various stakeholders (Energizer, school, Team Energize, Māori Health Providers, families and community). As demonstrated in Figure 7, committed leadership is a

necessary and central condition for relationships to be successful. As discussed in section 6.3.1 on page 97, committed leadership can take various forms, but will normally involve four key factors, in order of importance: perceived need; a willingness/ability to change; future proofing; and overcome barriers. In practice these factors often overlap, in the sense that the existence of one will often indicate the existence of one or more of the others. This is reflected in the concentric nature of the four circles in Figure 7 above.

6.4 What is working, what is not and where to from here

It became clear during this research that the Energizer was the facilitator of change. Energizers work with schools to improve healthy eating and physical activity environments, and support schools to make change. They empower teachers by enhancing their skills and confidence through modelling classes, providing resources, and collaborating with other agencies.

Schools want regular face-to-face contact with their Energizers to help maintain healthy eating and physical activity foci which are constantly being challenged by curriculum demands and Ministry of Education directives. Schools also want a long-term relationship with their Energizer, and a concerted effort is made by the programme director to match the Energizer with the school to maximise the potential for long-term relationships.

Maintaining a high Energizer profile raises the awareness of the programme in the community. There are myriad ways through which this has been achieved to date, including Energizer presence and involvement in school sporting events, the use of logo-branded clothing and vehicles, distribution of free, take-home teaching resources, and celebrating student physical activity and nutrition-related successes in school assemblies and similar fora.

The Project Energize programme operates as a 'one stop shop' resource for the school, rather than the school having to liaise with a number of agencies. This addresses time barriers for schools, as Energizers work in partnership with other health-promoting agencies in order to meet Project Energize programme goals.

Sub-contracting Project Energize out to Māori and Pacific Health delivery partners has helped engage Māori and Pacific Island students and their families. Successful sub-contracting was achieved by observing and integrating Māori and Pacific Island cultural

perspectives into the programme, and translating programme resources into Te Reo Māori.

Teachers reported supportive programmes like the Fruit-n-Schools programme, community gardens and breakfast programmes made big differences to the quality and quantity of food children consume and that these initiatives needed to continue.

The application of the "bottom-up" rather than "top-down" model of health promotion has helped to engage the school communities. This has been achieved by working alongside school communities to determine priority areas and then by gathering community support and expertise to meet varying needs. Successful initiatives discussed included "community breakfasts" hosted by schools for students, parents and key community personnel, Matariki-inspired events, walkathons, the planting of community gardens, and Boys-n-Blokes cooking classes. Such community events bring families together in an interactive and fun manner without placing financial pressure on participants.

What are the challenges?

A range of school-based challenges (e.g. insufficient time, pressure from central government to focus on National Standards, fundraising, student and family transience, work load issues, differences of opinion about delivery of nutrition messages, insufficient Energizer time) were factors raised by schools as barriers to successful participation in Project Energize. Many schools, regardless of decile, spoke of time barriers due to an overloaded curriculum, pressure of National Standards, and insufficient Energizer time.

Family-related challenges included a lack of parental support, especially in low socio-economic communities. Specific challenges reported included insufficient income to purchase more expensive healthy food, a lack of practical food preparation skills, low motivation to prepare home-cooked meals, seasonal employment demands, and other family priorities.

A lack of national public health policies to support the promotion and sustainability of a healthy school food environment was raised as a challenge for schools. Several school leaders felt it would be easier to enforce healthy eating policies and practices in schools if there was a government mandate to do so.

Suggestions for programme modification

There is a need for Project Energize to continue to prioritise its support for low decile schools. Due to socio-economic factors, low decile schools enter the programme with greater needs and require more support than high decile schools to meet the goals of Project Energize.

Annual programme reviews should include all people responsible for implementing the programme including school leaders, classroom teachers and Energizers. These people can share their experiences of what is working, what is not, and what might help to raise engagement and participation levels.

It became clear in the school leader interviews that there is an opportunity for Project Energize schools to meet and share ideas, especially in the area of fundraising, improving food security for students and families, and increasing family attendance at Project Energize events. This could take the form of after-school cluster meetings with school leaders, classroom teachers and Energizers. This would provide an opportunity for engaged school leaders to mentor and support their less engaged peers, as well as providing participating schools with practical examples of successful Project Energize initiatives (see Appendix L).

One deputy principal suggested that it would be beneficial to have Project Energize teaching resources uploaded to the programme website. This would ensure that the teaching resources were readily available to teachers, especially if an Energizer was unavailable.

School leaders, especially those from small schools, should be provided with support to complete the New Zealand Heart Foundation, 'Healthy Heart Award' application. The application process was described as time consuming and arduous, and was often not completed due to other school priorities.

With changes in teaching personnel, school leaders need to be regularly reminded of the Project Energize goals. Several school leaders reported that they had not seen the Project Energize goals since assuming their position of responsibility and others had simply forgotten.

Where the school has expressed a philosophical objection to an aspect of the programme, Energizers should adopt a more flexible, less purist approach. Under these

circumstances, school leaders may respond more positively when the programme parameters are less rigid.

Where there is a lack of perceived need in the community, up-skilling and education of the school leader is required. It is important that the Energizer recognize Prochaska's "Stages of Change" model (Prochaska, Norcross, Fowler, Follick, & Abrams, 1992) and make sure that interventions are appropriate for the school, recognizing that it takes time to see change.

Providing opportunities for community consultation (e.g. students, parents and the wider community) should be continued to maximise "buy-in and ownership" of the programme. Discussion with stakeholders to focus on strategies, including school, regional and national policies that could help improve access to improved physical activity and nutrition for children should be regularly undertaken.

6.5   Study strengths and limitations

This thesis has enhanced the limited body of knowledge with regard to factors associated with engagement and participation in school-based health intervention programmes, and in particular, the Project Energize programme. It has suggested best practice recommendations for the programme director that could be used to fine tune the programme, and provide extra support to low engaged schools, particularly low decile schools with a high percentage of Māori students.

A model for school engagement in Project Energize has been proposed that could be developed, refined and tested so that it could be used by Energizers to identify points of success or failure in schools. The model could be shaped on the prediction model designed to predict the adoption of the Quebec Healthy Schools programme (Raine et al., 2010). In simple terms the Energizers could take a developed checklist and use it to assess school engagement. The checklist could be used to highlight areas where additional resources and closely targeted remedial measures could be applied.

The strength of the Project Energize: school relationship facilitated the ease with which the researcher was able to access school personnel and conduct the face-to-face interviews. This included the Project Energize director purposively selecting 25 schools to ensure widespread representation (Chapter 3.2.2 on page 39), and observing strict inclusion and exclusion criteria, minimising potential for bias. Although the selection resulted in a sample with a lower ratio of low engaged schools (n=6) in comparison to medium (n= 8), and high engaged schools (n=11), this number more than represented the overall 4.3% level of low engaged schools (as reported by the Energizers, post hoc).

Face-to-face interviews were limited to school leaders. This worked well when the school leader (if principal) had an overview of the school and could assess programme impact from multiple perspectives. However, if the school leader was the principal of a large school, he/she often had little to do with the day to day implementation of the programme and was limited in programme knowledge, practice and processes. In many cases schools overcame this by having the teacher in charge of the Project Energize programme present at the interview; however, on three occasions this did not happen. Future researchers need to ensure that the person who is responsible for the programme is present at the interview.

Since programme success is partially dependent on the support of parents and caregivers it would be of value to extend the research to include families. Focus groups with Energizers, parents, caregivers and Whānau, in particular those from low socio-economic communities, would be useful in determining the level and kind of family support needed to assist with the promotion of healthy eating and physical activity.

It has been shown when undertaking health intervention process evaluations that evidence needs to include the informed opinions of stakeholders as well as collecting measurements of programme success (Swinburn et al., 2005). The study used a combination of quantitative and qualitative data collection methods to provide multiple sources of evidence while offsetting the limitations associated with individual data collection methods.

School leader interview questionnaire ratings were self-reported and had the potential for over or under reporting. Future research could include development of the questionnaire to include more questions related to engagement and participation in the programme. For example it would have been useful to gather information about staff numbers engaging in professional development, and attendance at Project Energize meetings. Interviewer weightings were also subjective and created potential for interviewer bias.

The Energizer score for engagement was assessed retrospectively in March 2011 for the period pre-October 2010, and then again for the period between October 2010, and March 2011. This was a potential limitation because in March 2011 the Energizers were not working in schools but were preparing for a formal evaluation conducted in March-May, 2011. The retrospective assessment created potential for recall bias. Another limitation was that the ratings were subjective and unable to be cross-moderated, creating potential for further bias. It should be noted that the Energizers received guidance on selection engagement criteria, and as professionals working with the Project Energize programme, they would have been familiar with programme expectations.

The school stocktake questionnaire was completed by the school's Energizer rather than an independent researcher creating potential for researcher bias. While this should not have provided any data collection issues it is possible that a reduced school-Energizer relationship may have had an impact on the recording of results. Ideally, data collection should have been undertaken by independent assessors however this would have been expensive and might not have been as effective for interpreting the questions. It could be argued that there were

benefits from having the Energizer administer the questionnaire, i.e. less disruption and inconvenience to the school.

As it has been shown that improved nutritional intake is associated with improved student outcomes (Murphy et al., 1998), it would be of interest to investigate whether higher levels of school engagement in the programme are associated with improved health and/or education outcomes. It was not possible to investigate this in this study due to the size of the existing project and the Ministry of Education's refusal to allow academic school data to be used, however this could be considered in future research. If it could be shown that higher measures of engagement and participation are associated with improved student outcomes there would be a stronger case for future investment in promoting engagement and participation.

Since decile and ethnicity were identified as factors associated with engagement and participation in Project Energize, it would be of interest to know the extent to which these factors affect engagement. Knowing the critical decile number that affect engagement would mean that the project director could prioritise programme resources accordingly.

Although Project Energize was a Waikato-based programme with limitations of transferability, the lessons learnt could be shared with other providers of school-based intervention programmes, either in New Zealand or internationally.

The 2011 evaluation has shown that Project Energize is having a favourable effect on the patterns of growth and fitness of children in mainly rural Waikato primary schools. Future research could test the Project Energize model across another region in New Zealand to see if it can achieve the same positive outcomes. It would be of interest to trial the programme in urban South Auckland where there are high numbers of Māori and Pacific children, and deprivation is significant. The potential rolling out to the rest of New Zealand requires, big picture support from government and other sectors including the food industry.

6.6 Big picture policy changes to advance the effectiveness of Project Energize

During the course of this research the 66th General Assembly of the United Nations (United Nations, 2011) released a political declaration responding to the rising incidence of non-communicable diseases with a list of recommendations supporting the Project Energize approach to health promotion. Recommendations included the need for multi-sectoral

government health policies to address non-communicable risk factors and the underlying determinants of health, as well as strategies to create health-promoting environments including the promotion of school-based physical activity and healthy eating programmes. Based on the Assembly's declaration, arguments need to be presented to policy makers, health and education delivery agencies that there are educational, health, social, and political benefits to be had from investing in school health programmes. Supporting evidence would show that the Project Energize programme is improving the health of students, parents, families and teachers in the Waikato region, and that the programme is cost effective, and should continue. It is often a challenge to persuade government to invest in preventative health interventions because results are generally long-term and timely results are needed in order to justify expenditure. However it is important to ask the question 'what are the best measures of a successful health intervention programme?' Programme success is often measured by differences in physiological risk factors, morbidity and mortality in randomised clinical trials (Swinburn et al., 2005). Since these factors may not materialise until years after the programme has ended, it is suggested a better gauge of success would be to measure changes in knowledge, attitude, and skills (Swinburn et al., 2005). It is possible that such broader measures would show more dramatic effect and highlight the positive effects of the health prevention programme in a more timely way than longer-term measures.

Multi-sectorial policy changes and interventions recommended by the Fight Obesity Epidemic to the Health Select Committee of Inquiry into Obesity and Type Two Diabetes in New Zealand (Fight the Obesity Epidemic, 2006) recommended the banning of all unhealthy foods and drinks to children in any medium, restricting and ideally banning sponsorship involving brands of unhealthy foods and drinks, prohibiting the sale of unhealthy foods and drinks in schools, introducing a compulsory 'traffic light' system that easily identifies healthy food choices for the consumer, providing incentives to manufacturers to reduce the fat, sugar content and energy content of energy dense foods, increasing the cost of unhealthy foods through taxes, and reducing the price of healthy foods by removing the Goods and Services Tax (e.g. fruit and vegetables). To this point in time, little progress has been made in any of these areas, and some policies that were implemented to support a healthy school environment (Ministry of Education, 2010a) have been reversed. If the increasing prevalence of overweight and obesity amongst children is to be addressed then significant policy changes need to occur.

The causes of the obesity epidemic are varied, however research shows that having an adequate income is the single most important modifiable determinant of health in New Zealand (Tobias & Howden-Chapman, 2000). This has been recognised by several New Zealand political parties, (Green Party of New Zealand, 2011; Mana Party, 2011; Maori Party, 2008; New Zealand Labour Party, 2008) which have each endorsed public health policies aimed at reducing pressure on low income families. Specific strategies promoted include the removal of Goods and Services Tax on fresh on fruit and vegetables, and the introduction of a free school lunch programme. It is believed that with supportive government policies, effective health interventions like Project Energize that are aimed at addressing inequalities can be sustained. Policy and funding decisions are usually determined by political and economic factors rather than evidence-based data, making it more difficult to ensure the sustainability of health intervention programmes (Swinburn et al., 2005). Continued lobbying by health, education, political and community sectors is required to persuade government that there are long-term health benefits to be gained from reducing the cost of living for low income families, providing supportive public health policies to promote a healthy school-food environment, banning the advertising of unhealthy fast food to children, and developing collaborative relationships with the food industry to develop healthier food products.

Recognising the link between child health and education is an important part of strengthening education and health sector relationships, and to move school health promotion forward (WHO Expert Committee on Comprehensive School Health Education Promotion, 1997). In the New Zealand context this means sharing a common vision, and mandated collaboration between the Ministry of Education, Ministry of Health, and the Ministry of Social Development to determine priorities and strategies for improving student health and consequent achievement. In the context of Project Energize this has meant continuing to create opportunities for school leaders, health providers, parents and caregivers to dialogue and collaborate in order to move the programme forward. This process started with the formation of The Project Energize Governance Group in 2005, and has continued with school leaders, parents, caregivers and whānau consultation during the 2007 and 2011 Project Energize evaluations. It is important that this practice continues to ensure that the programme provides the best opportunities to improve physical activity and nutrition for children. The mixed responses from school leader interviews remind us that schools are unique places with specific needs, and that new approaches may need to be developed to raise levels of school

engagement and improve the effectiveness of this programme. The question constantly needs to be asked 'what more can be done to engage students, teachers, parents and the wider community so that children are able to maintain good nutrition and physical activity habits that will persist throughout life and into adulthood. Prevention of non-communicable diseases is the only sensible solution.

6.7   Conclusion

It has been conclusively shown that Project Energize is effective in improving student health outcomes and reducing health inequalities. The Project Energize model based on partnerships, community ownership, meaningful stakeholder participation, reducing inequality, respecting and observing Māori perspectives and using trained Energizers as facilitators of change has gained the support of participating schools, students, teachers, families and communities in the Waikato region.

This study has shown that all participating schools are engaged in the Project Energize programme but engagement levels vary. The main factors found to be associated with engagement and participation across 188 schools are socio-economic status, and ethnicity. When there is committed school leadership and an effective relationship with an Energizer, high levels of engagement and participation are possible despite socio-economic status and ethnicity. The most common challenges reported by the 25 school leaders focused on by the researcher were a lack of parental support, socio-economic hardship, other school priorities, curriculum demands, a perceived need to fundraise with unhealthy food, transience of student enrolment, and insufficient Energizer time. This study confirms the causal link between engagement and participation, and programme effectiveness. Arising from this, Energizer rating scores can be used by the Programme Director to prioritise resources to provide extra support to low engaged schools. In particular, attention ought to be given to low decile schools with a high percentage of Māori students with a view to reducing existing inequalities and improving health outcomes for all children.

With the rising cost of health care and New Zealand's limited health care budget, it is vital that policy makers and health promotion administrators understand where best to prioritise spending. Project Energize has been shown to be successful and cost effective and should seriously be considered as a national health intervention programme.

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Appendix A. Interview Questionnaire

Evaluation of Project Energize

Face to Face Interview Questions: School Principal or Lead Teacher

Introduction

The objective of this interview is to capture the "essence" of your Project Energize experience To find out what worked , what didn't work and what could be done differently in the future to ensure that Project Energize is able to make a positive difference to your school community. The information collected from this interview will be anonymous. Schools will be identified only by their decile, proportion of Māori enrolled, years in the programme and whether they are rural or urban.

Warm Up

1. What was the deciding factor in committing your school to take part in Project Energize?

2. What do you perceive to be two to three main benefits for your school from engaging in Project Energise?

Programme Participation and Implementation

3. How important do you think the promotion of healthy eating and physical activity is in schools? *(Circle number or response that best applies to you)*

1	2	3	4	5	6	7
Not all important		Moderately important	Important	Very important		Extremely important

4. What goals of Project Energize has your school worked on (show goals)? What PE goals has your school been most successful in achieving? Which ones have been more difficult to achieve? Why?

Goal	Most difficult		Intermediate			Most successful		Comments
	1	2	3	4	5	6	7	
Encourage a minimum of 20 minutes daily physical activity								
Advocate for and encourage lunchtime physical activity at least twice a week								
Encourage and advocate for at least five minutes of 'home play' each day								
Encourage a reduction in sedentary time especially screen time if over two hours a day								
Raise awareness of incidental opportunities at home and school								
Raise awareness of the importance of children learning fundamental movement skills and movement literacy								
Encourage and promote water as the best drink								
Ensure water is available in class								
Encourage the consumption of milk and other high calcium foods every day								
Encourage an increase in fruit and vegetable consumption								
Advocate for and encourage improvement of food brought from home, especially a reduction in the amount of high energy low nutrient food								
Encourage and advocate for an increase in availability of healthy choices at school and a decrease in high energy/low nutrient foods								
Increase the awareness of the importance of breakfast and encourage a breakfast habit								
Work towards registration in the NHF Healthy Heart Award for schools: Tohu Manawa Ora-Kura								
Work towards consistent nutrition messages in all aspects of school and community interaction e.g. healthy fundraising options.								

5. How effective has Project Energize been in meeting your school's goals? *(Circle number or response that best applies to you)*

1	2	3	4	5	6	7
Not at all effective		*Moderately effective*	*effective*	*Very effective*		*Extremely effective*

6. Why (motivations and interest)?

7. What are the biggest changes you have seen in your school since the programme started (children, school environment, community)?

8. What do you do now that you didn't do before?

9. What changes have given your school community a buzz?

10. Reflect on your answers to questions 1 and 2. (READ BACK). Was the programme as successful as you thought it would be?

What has got in the way of or supported your school's progress in meeting the goals?

Give any examples.

11. What do you think would help protect the progress made and assist with making further progress?

12. How useful do you find the Project Energize resources?

1	2	3	4	5	6	7
Not at all useful		Moderately useful	useful	Very useful		Extremely useful

Which resources have been particularly helpful?

What changes or improvements could be made to these resources to make it easier to deliver the programme?

13. What other specific factors have helped or hindered Project Energize in your school?

14. Are the healthy eating and physical activity changes supported by parents/whanau? YES/NO

Why/why not?

15. How difficult would it be to implement the goals of Project Energize without support? Using a scale of 1-7 (1 being impossible and 7 being extremely easy) rate your response.

1	2	3	4	5	6	7
Impossible	Very difficult	Moderately difficult	Neutral	Easy	Very easy	Extremely easy

16. Do you think PE would work without the Energizers? YES/NO

17. Are there any other comments you would like to make about Project Energize that could contribute to its on going implementation and success (lessons learned, success stories that haven't been covered)?

Appendix B. Ethics Committee Approval of Changes

**Health
and
Disability
Ethics
Committees**

Northern Y Regional Ethics Committee
Ministry of Health
3rd Floor, BNZ Building
354 Victoria Street
PO Box 1031
Hamilton 3204
Phone (07) 858 7021
Fax (07) 858 7070
Email: northerny_ethicscommittee@moh.govt.nz

22 November 2010

**Kasha Latimer
Project Energise
Sport Waikato
P.O. Box 46
Hamilton**

Dear Kasha

Ethics ref: **NTY/10/04/041**
Study title: **Extended Evaluation of Project Energize.**

Thank you for your letter dated 4th November 2010 requesting notifying the Northern Y Regional ethics Committee of small alterations to the above evaluation.

The minor changes to the components of the above study were noted and approved by the Chairperson of the Northern Y Regional Ethics Committee under delegated authority.

Yours sincerely

**Amrita Kuruvilla
Administrator
Northern Y Ethics Committee**

Email: amrita_kuruvilla@moh.govt.nz

Appendix C. Ethics Approval from AUT Ethics Committee

AUT
UNIVERSITY
TE WĀNANGA ARONUI O TAMAKI MAKAU RAU

MEMORANDUM
Auckland University of Technology Ethics Committee (AUTEC)

To: Elaine Rush
From: **Dr Rosemary Godbold and Madeline Banda** Executive Secretary, AUTEC
Date: 15 April 2011
Subject: Ethics Application Number 11/89 **Extended evaluation of project energize (a masters thesis beign undertaken by Anna Mrkusic).**

Dear Elaine

We are pleased to advise that the Auckland University of Technology Ethics Committee (AUTEC) approved your ethics application at their meeting on 11 April 2011, subject to the following conditions:

We request that you provide the Ethics Coordinator with a written response to the points raised in these conditions at your earliest convenience, indicating either how you have satisfied these points or proposing an alternative approach. AUTEC also requires written evidence of any altered documents, such as Information Sheets, surveys etc. Once this response and its supporting written evidence has been received and confirmed as satisfying the Committee's points, you will be notified of the full approval of your ethics application.

When approval has been given subject to conditions, full approval is not effective until *all* the concerns expressed in the conditions have been met to the satisfaction of the Committee. Data collection may not commence until full approval has been confirmed. Should these conditions not be satisfactorily met within six months, your application may be closed and you will need to submit a new application should you wish to continue with this research project.

When communicating with us about this application, we ask that you use the application number and study title to enable us to provide you with prompt service. Should you have any further enquiries regarding this matter, you are welcome to contact Charles Grinter, Ethics Coordinator, by email at ethics@aut.ac.nz or by telephone on 921 9999 at extension 8860.

Yours sincerely

Dr Rosemary Godbold and Madeline Banda
Executive Secretary
Auckland University of Technology Ethics Committee

Cc: Anna Mrkusic annammrkusic@hotmail.com

Appendix D. Researcher Letter of Introduction

HEADS UP

Introduction: Anna Mrkusic will be assisting Elaine Rush with the evaluation of Project Energize.

Anna is to conduct the face to face interviews with school principals/lead teachers. The objective of the interviews is to try and capture the "essence" of your Project Energize experience. She is keen to find out what worked, what didn't work and what could be done differently in the future to ensure that Project Energize is able to make a positive difference to your school community.

The interviews will be arranged by your school Energizer in consultation with you.

Anna, a Food and Nutrition teacher at Northcote College, Auckland is completing her Masters at AUT this year. Please free to contact her if you wish to discuss any aspect of the interview with her.

Contact details: 09 4793480 (Hm)   or 021 1437308

Appendix E. Information Sheet for Principals

Project Energize
Extended evaluation: What do school leaders tell us?

Invitation
You are invited to take part in the extended evaluation of Project Energize. Please take the time to read the information carefully. The research is being conducted as a project for a MPhil degree at AUT University. My name is Anna Mrkusic, I am the MPhil student and I will be conducting the research under the supervision of Professor Elaine Rush and the Project Energize team.

What is Project Energize and why has your school been chosen to participate in the extended evaluation?
Project Energize is a program for Waikato schools that encourages physical activity and healthy eating for children. This is a school based project which also aims to support parents and reach the school community. Your school is part of Project Energize so we are keen to talk with you and hear about your experiences. You were chosen because you are the Principal or lead teacher for Energize in your school and can speak for your school.

Why are we doing this ?
It is important to carry out an in depth evaluation with the "target group" because the programme team needs to understand what the barriers and enablers are to programme implementation so that positive improvements can be made to improve and sustain Project Energize. One of the projects strengths is that schools have been able to tailor the programme to suit their needs. We want to find out why initiatives have worked (or not) in your school so that these experiences can

be shared with others so that Project Energize can continue to improve the health and fitness of all children.

What is involved?
A 30 minute face to face interview with an independent researcher at a time that is convenient for you. This arrangement will be made by your school Energizer and confirmed by email.

What are the possible benefits of taking part?
The interview process is an important part of evaluating Project Energize as it will add depth to our understanding. If we can show through the school stocktake that positive changes have occurred within the school environment and from the measurements of the children that there has been an improvement in student health and fitness the interviews will help tell us why (or why not). This information will be used to help improve Project Energize and provide hard evidence for the long term usefulness of Project Energize.

Will the information collected be kept anonymous.
Yes. The information collected about your school will be kept anonymous. We hope to be able to publish the results of this wider study in a scientific journal. If this happens the results would be completely anonymous and school details would not be made public at all.

Will I get to find out the results of the study?
Yes, the study results will be available on the website www.projectenergize.org.nz and through all participating schools. Please note that this is a population study and no individual schools or children will be identifiable in the reports. Be

advised that there will be a delay of months between data gathering and reporting.

Who has reviewed the study?
This study has received ethical approval from the Northern Y Ethics Committee.

..........If you have any questions?

You may call 0800 ACTIVE (Project Energize, Sport Waikato).

If you have any queries or concerns about your rights as a participant in this study you may wish to contact a health and Disability Services Consumer Advocate on 0800 42 36 38 (0800 ADNET)

This study has received ethical approval from the Northern Y ethics committee

Appendix F. School Leader Consent Form

Principal / Lead Teacher Consent Form: Project Energize Extended Evaluation

REQUEST FOR AN INTERPRETER (*Circle one yes/no*)

English	I wish to have an interpreter.	Yes	No
Maori	E hiahia ana ahau ki tetahi kaiwhakamaori/kaiwhakapakeha korero.	Ae	Kao
Samoan	Ou te mana'o ia i ai se fa'amatala upu.	Ioe	Leai
Tongan	Oku ou fiema'u ha fakatonulea.	Io	Ikai
Cook Island	Ka inangaro au I tetai tangata uri reo.	Ae	Kare
Niuean	Fia manako au ke fakaaoga e taha tagata fakahokohoko kupu.	E	Nakai

INFORMATION

1. I have read and I understand the information sheet dated 1ˢᵗ February 2011 for the Project Energize Extended Evaluation. I have had the opportunity to discuss this study and I am satisfied with the answers I have been given.

2. I understand taking part in this study is voluntary and that I may withdraw at any time and this will in no way affect my or my schools relationship with the project Energize programme.(not sure about this)

CONSENT (*Complete if you are the Principal or the Lead teacher of your school who has been largely responsible for project Energize.*)

I, _____Principal /Lead teacher *(circle your position)* of
_____ school hereby give my consent to taking part in this study.

Signed: _____   Date: _____ /_____/ ____

Your name *(print clearly):*_____

School Address:_____

School Phone no:_____

RESEARCH DETAILS

Full name of researcher: *Dr David Graham*   **Contact Phone Number : 0800 ACTIVE**

Appendix G. Field Notes Form

Field Notes for Principal Interviews

School:	Name of Principal/Lead Teacher:
Date:	
Observation of school setting:	Non verbal communication:
Any problems	Feelings

Appendix H. Energizer Criteria for School Engagement

<u>Key elements agreed on in June 2010 by all Energizers as to what makes a school engaged (Project Energize Project Manager, Febuary 2011)</u>

- Principal believes in what Project Energize is about
- Principal and senior management are aware of the school's strengths and weaknesses related to PA/ HE (physical activity and healthy eating)
- Lead teacher is the lead by choice and is interested
- Lead teacher has some influence over other teachers
- Regular meeting times with Lead Teacher and Principal
- Needs analysis is timetabled in to the start of each year and whole staff are involved
- Energizer is regarded as a staff member
- Staff ask to meet with Energizer
- School distributes all the material Energizer sends / takes in
- Having lead teachers in each area of the school for big schools
- Teachers who are encouraged to attend all professional development that is offered
- Teachers try things that have been suggested

Using the above criteria, in September 2010, the Project Manager (PM) asked all the Energizers to select 2 schools from each of the three categories, high, medium and low engagement. For the most and least engaged the Energizers were asked to give a brief reason why they had selected those schools.

Using this information PM collated all the selected schools into three level of engagement. Schools were removed from the list if they had a recent change in principal and lead teacher or if they had a commissioner in the school. From that list 25 schools were purposively selected to represent decile, locality, time in programme, percentage Maori.

Some schools were removed during the process if they had a recent change in principal and lead teacher – another two schools were discarded because they had commissioners in the school. The PM then grouped the schools based proximity and traveling distance for ease of interviewing and at this point the E called their principals to check availability during the March / April timeframe.

Appendix I. An Exemplar showing Code Development for one School

Context: Influencing Factors contributing to Engagement

		Quotation: **People**	Condensed Meaning	Final Code
5	H T3 2009	When I 1st came here as Principal we had a lack of student being active. As an active person myself I found that very difficult. I was also alarmed about the food our students were eating.	Principal concern for student health and wellbeing	Responsibility= thorough commitment
5		I liked their (PE) model of 1.30 working with the teachers; not saying" I am going to teach you how to do it".	Energizers working with teachers rather than on them Respecting teacher knowledge and experience	Respectful, meaningful relationship with PE
5		(Ref Goal 3).I don't think school has changed that. That is what our parents want anyway.	What our parents want	Parental expectations= thorough commitment
5		It all comes down to learning. Curriculum leakage occurs unless the children are eating properly.	Principal believes health and education are linked	Knowledge and understanding
5		But we also have our Strategic goal, which last year was number 4 and we have moved this year to number 1.It is around Behavioural Learning. Part of Behavioural Learning is being totally fit for learning. Part of BL involves eating well, sleeping well, exercising regularly and those things. Which fits this model beautifully. We think it is extremely important!	Behavioural Learning a top priority for the school. PE can assist with goal	Beliefs and values underpin commitment
5		Goal 15 (Consistent Nutrition messages) Other than that, we really are a healthy school AND we really push it. You put your stake in the sand and you stick by your morals and beliefs because actually, it improves student learning and if that is what we are ABOUT and that is what all schools should be about in NZ, you cannot allow them to eat rubbish food. It is like a smoke-free zone. We should all be smoke free zones. We should all be junk free zones. If we had my way that is what would happen.	"Stick by morals and beliefs" Health is linked to student learning outcomes. School commitment is required	Commitment Belief and responsibility
		I think the community are very supportive of us in our sporting ventures e.g. we have been doing a lot of swimming lately. The parents raised money so that we could paint our swimming pool. Our fundraisers are healthy. We had a football tournament that we ran and we all had healthy food. Wraps, sandwiches – I think we made $230.	Parents support the school in healthy fundraising	Community commitment
5		If we had had sausages we probably would have made $500 -$600.We have really had to talk about it as a staff and as a Board. This change in being healthy has actually meant a reduction in money.	School community has found it more difficult to fundraise if following PE model	Thorough commitment.

5		At the end of the day it is about making sure our children are well for a lifetime. Five years ago we did have sausage sizzles. We had all those things. They sell! But if you have the beliefs that we have, you cannot go there.	Principal and BOT share the same vision	Beliefs and attitudes =thorough commitment
5		For me it is not about getting a sticker or a reward and we don't believe in extrinsic awards. For me, it is about who we are and our being/ our wellbeing/ our ability to learn. For the amount of energy and time it would take to full in the forms I could actually being doing something else with the children.	Principal being authentic, following beliefs and attitudes. It's all about the children.	Commitment and responsibility
5		When we were choosing our new playground we looked at playgrounds that would help improve the fundamental skills of our students. So the whole thing became a tight discussion. This is not only at a school level but at a board level as well about how we do things for our children.	Principal and BOT share the same vision	thorough commitment
5		But we also have our Strategic goal which last year was number 4 and we have moved this year to number 1. I report on this strategic goal to the Board every board meeting and we put money towards to make things happen.	Priority given to goal by BOT	thorough commitment
5		We have had that (goal sheet) and we have also put this in our Whanau newsletter book so that our parents all know. We have been ticking them off.	Regular communication with parents	thorough commitment
5		For example in our first year we concentrated on PA and in our second year we concentrated on healthy eating and this year we are concentrating on both. We have a strategic plan around the goals.	Effecting planning and procedures to assist with programme implementation	Commitment
5		We seem to have overcome all the little barriers so that kids are active- we make sure they are active.	Making PA possible	Commitment
5		We walk our kids down the road to the pine -plantation for cross country and training. Parent accepts all of those things. That those are the things we do to keep our kids active and they are very supportive of that.	Parents' acceptance	Parental support and trust= thorough commitment
5		It was a big undertaking (referring to drug education programme)and yet I felt confident by these people all being confident with me	It was a big undertaking yet I felt confident	Courage possible with support
5		I am not so scared to have conversations around nutrition. (Principal feels empowered and supported).	I am not so scared Confidence has come PE support	Principal empowered to uphold PE principals

5		The more we do at school the more it is rolling through to our families as well. Our parents felt very proud to be part of a school that has such high standards. The parents were delighted. One parent came to me and said "did you talk to the other principals"? I said "yes I have emailed them and that we got an interesting array of responses." She felt really proud, that we had made a stand and that her child comes to a school where there is really strong health [culture].	The shared values and beliefs of PE are reaching and impacting families. Parents proud to be associated.	Thorough commitment
5		We went to a softball tournament and sat my children and parents down and said "Look there is a dairy here. Yes it does sell lollies, yes it does sell coke etc. but you will not be buying them because this is a school day and we believe in being healthy. These are the things you can buy" and I went through what they could buy. And I would not expect anyone to have any of that. All good. Now some of the other schools hadn't quite picked up on that and they were eating lollies and drinking terrible things. Now my parents were the ones that were actually really angry about that. Pam have you seen this, have you seen that. They felt really proud that they were part of a school that had these values. I had one boy that went and bought lollies and I took them off him in front of everybody. "Oh, [name of student] why did you do that?" That was a bit stupid. It is about having those expectations. Yeh, I think the other kids did appreciate it. (powerful, consistent behaviour)	Principal models consistent behaviour. Has high expectations around the programme. Not afraid to make a powerful public stand.	Principal bold and courageous.= thorough commitment
		Their model is great. It is nice when you are taking" the high road "as I call it, that you have the back up of other people, it is just not us. It is Sport Waikato. When I sent an email [to participating principals] about concerns about the lollies at this tournament, I got a thank-you letter from Mathew Cooper , Sport Waikato, saying thanks for being an advocate for the kids wellbeing.	Important to have support and backing of reputable organisation	Collaborative ,Supportive relationships
5		I think there is no exception to the rule. You put your stake in the sand and you stick by your morals and beliefs because actually it improves student learning and if that is what we are ABOUT and that is what all schools should be about in NZ you cannot allow them to eat rubbish food.	There is no exception to the rule	Principal steadfast and unwavering= absolute commitment
5		When I surveyed my parents I said, 10 years ago I never would have dreamt about teaching this (drugs) in a primary school. But due to the situation we were in, we have. I would love some feedback about whether 38.53 you think this is important. Almost every parent said they wanted it to be taught every second year.	Principal addresses the tough issues. Seeks parental feedback	Active communication Engagement= thorough commitment
5		So basically it does take a lot of energy and time from me and my DP.	Despite extra time Principal and Deputy do what it takes	Commitment
23		So we go along with any health initiatives that benefit our kids	Benefit our kids	Commitment

23	T1 2005	But we did consultation with our school in terms of our vision and (after numeracy and literacy) health came out on top as a third priority. So we actually teach health 3 times a year rather than the just once a year. Health is a priority in terms of the community as well.	Community Consultation indicated a health need. School teaches more health	Thorough commitment
H	1	Yeh, I don't think there is anything that has hindered it because **people are really receptive to what is** happening. No I don't think we have had anything	**people are really receptive to what is** happening	School community support for programme
H	1	Yes, because of the increase in children participating in extra- curricular sports	Parental support for programme	commitment

Princ. No	Engagement	Quotations: **Perceived Need**	Condensed Meaning	Final Code
5	H T3 2009	When I 1st came here as Principal we had a lack of students being active. Our children didn't play at lunchtime. I was also alarmed about the food our students were eating. Goal 2 We have moments when our children are very active and when they are not, we have behavioural problems	Inactivity and poor food choices were causes for concern	Awareness, Leadership
5	H	It was a big undertaking (referring to drug education programme)and yet I felt confident by these people all being confident with me	Professional support = willingness to implement programme	Leadership
5	H	How important do you think the promotion of healthy eating and physical activity is in schools? (Circle number or response that best applies to you) We think it is extremely important! It is all about the brain. Our brain requires oxygen to the brain to function well. If they are not exercising they are not getting that oxygen intake .Same as the food intake.	Principal believes firmly in the importance of PA and HE. Linked to performance.	Awareness of need
5	H	I think sleeping is one that we need to add but obviously we can't control our children's sleeping. I am going to have a good go though, just watch me. I am going to have a few parent sessions on sleeping. Our data on sleeping is shocking. I could almost name and point out our children who are not getting enough sleep. I have some ideas about how I might overcome that.	Some children are not getting enough sleep	Awareness of need
23	H T1 2005	But we did consultation with our school in terms of our vision and (after numeracy and literacy) health came out on top as a third priority. So we actually teach health 3 times a year rather than the just once a year. Health is a priority in terms of the community as well.		Perceived need

Princ. No	Engage ment	Quotations: **History**	Condensed Meaning	Final Code
5	H	We have water in classrooms. I already had that philosophy. Before PE we had the Life Education Truck and we were pushing healthy eating then	School had made a start on making changes to HE and PA prior to PE	Prior commitment

Princ. No	Engage ment	Quotations **Willingness to Change Cultural Mores**	Condensed Meaning	Final Code
5	H	Goal 15 (Consistent Nutrition messages) Other than that, we really are a healthy school AND we really push it. You put your stake in the sand and you stick by your morals and beliefs because actually, .. it improves student learning and if that is what we are ABOUT and that is what all schools should be about in NZ, you cannot allow them to eat rubbish food. It is like a smoke- free zone. We should all be smoke free zones. We should all be junk free zones. If we had my way that is what would happen.	"Stick by morals and beliefs" Health is linked to student learning outcomes. School commitment is required	Commitment Belief and responsibility
5	H	I am not so scared to have conversations around nutrition. (Principal feels empowered and supported).	I am not so scared Confidence has come PE support	Willingness to change
5	H	We went to a softball tournament and sat my children and parents down and said "Look there is a dairy here. Yes it does sell lollies, yes it does sell coke etc. but you will not be buying them because this is a school day and we believe in being healthy. These are the things you can buy"	you will not be buying them because this is a school day and we believe in being healthy	
5	H	I think there is no exception to the rule. You put your stake in the sand and you stick by your morals and beliefs because actually it improves student learning and if that is what we are ABOUT and that is what all schools should be about in NZ you cannot allow them to eat rubbish food.	There is no exception to the rule	Principal steadfast and unwavering= absolute commitment
5	h	We all sit down at lunch time for 10 minutes and all eat and they are not let go until they have eaten their healthy stuff. Must eat at least 2 of their sandwiches. Watch those kids that don't eat their healthy food. Anna-Do you see that as your role? P – Yes we do		
5	H	We had a football tournament that we ran and we all had healthy food. Wraps,	Healthy fundraising is	Absolute commitment

		sandwiches – I think we made $230. If we had had sausages we probably would have made $500 -$600. This change in being healthy has actually meant a reduction in money. At the end of the day it is about making sure our children are well for a lifetime. Five years ago we did have sausage sizzles. We had all those things They sell! But if you have the beliefs that we have you cannot go there.	difficult	
1	H	It is adapting the programme so that everyone can succeed so that instead of just having the high jump we might have another jumping activity which isn't competitive. So I suppose it is thinking about those who want to be competitive and competing and those who aren't into that kind of thing but who are still participating at their own level	it is adapting the programme so that everyone can succeed	Willingness to change approach to sport and PA
1	H	The key factors is the personnel um and we have had lots of successes such as the vending machine, improvement in students fitness, the implementation of new programmes such as the PMP that has all come out of what the project has done for us. It is about a change of thinking at the PPTA level about foods for fundraising; it is change in the staffroom about what teachers are eating, probably the biggest success is a guy who has gone from 2 cans of coke for lunch to sitting down today and he has had a banana and a bag of apples/ bag of little apple slices and he had porridge for morning tea. (laugh) That's a fairly big success I would think	School making many changes to the PA and food environment at school. School has not been in programme long	Willingness to change

Princ. No	Engage ment	Quotations: School Culture	Condensed Meaning	Final Code
5	H	This change in being healthy has actually meant a reduction in money. At the end of the day it is about making sure our children are well for a lifetime. Five years ago we did have sausage sizzles. We had all those things They sell! But if you have the beliefs that we have you cannot go there.	Sacrificing monetary gain in order to maintain beliefs and values	Principles upheld
5		We seem to have overcome all the little barriers so that kids are active- we make sure they are active.	overcome all the little barriers	No barrier acceptable
5		Our parents felt very proud to be part of a school that has such high standards. She felt really proud, that we had made a stand and that her child comes to a school where there is really strong healthy...(culture)...(empowerment, standing up for what you believe is right)	standing up for what you believe in	Principles upheld
5		We work really hard on eating healthily, including the staff. I have a real thing about the teachers being the "carers" and we need to care for the teachers and if the teachers are not well in themselves then they can't deliver a good curriculum. So we are the full package so what we believe in for our students, we believe in for ourselves and our parents and our community	wellbeing sort for the whole school community	Holistic commitment
5		We also believe in our children being intrinsically motivated (clear sense of what the school is all about).		
5		Other than that we really are a healthy school AND we really push it. (belief and values= commitment) Our fundraisers are healthy	Up holdings belief and values= commitment)	Absolute commitment
5		It was a big undertaking (referring to drug education programme)and yet I felt confident by these people all being confident with me. We went to a softball tournament and sat my children and parents down and said "Look there is a dairy here. Yes it does sell lollies, yes it does sell coke etc. but you will not be buying them because this is a school day and we believe in being healthy. These are the things you can buy" and I went through what they could buy. And I would not expect anyone to have any of that. All good. Now some of the other schools hadn't quite picked up on that and they were eating lollies and drinking terrible things.	 Standing up for what you believe	Courage Principles upheld
5		Now my parents were the ones that were actually really angry about that. Pam have you seen this, have you seen that. They felt really proud that they were part of a school that had these values.	standing up for what you believe in	Principles upheld

5		I had one boy that went and bought lollies and I took them off him in front of everybody. "Oh, Kyle why did you do that?" That was a bit stupid. It is about having those expectations. Yeh, I think the other kids did appreciate it. (powerful, consistent behaviour)	standing up for what you believe in.	Principles upheld
5		We all sit down at lunch time for 10 minutes and all eat and they are not let go until they have eaten their healthy stuff. Must eat at least 2 of their sandwiches. Watch those kids that don't eat their healthy food. Anna-Do you see that as your role? P – Yes we do. It all comes down to learning. If you go to most schools the afternoon periods are a waste of time. Anything after school the kids just don't get (referring to learning). If we want optimum learning we have to make sure that they have had something really good to eat at lunchtime. They have had a run around and a play, they have had a of drink water and gone to the toilet and then we have got them for at least an hour. Out optimum learning from them. We talk a lot about curriculum leakage. Basically the afternoon is curriculum leakage unless the children are eating well at lunchtime and doing what their brain requires.		

Princ. No	Engagem ent	Quotations: **Relationships with Project Energizer**	Condensed Meaning	Final Code
5	H	I liked their (PE) model of 1.30 working with the teachers; not saying" I am going to teach you how to do it".	Working with teachers not on them	Partnership
5		It was a big undertaking [referring to drug education programme] and yet I felt confident by these people all being confident with me	Confidence grows with support	Supportive. Substantial relationship with PE
5		Their model is great. It is nice when you are taking" the high road "as I call it, that you have the back up of other people, it is just not us. It is Sport Waikato. When I sent an email (to participating principals) about concerns about the lollies at this tournament, I got a thank-you letter from Mathew Cooper , Sport Waikato, saying thanks for being an advocate for the kids wellbeing.	Backup, support and acknowledgement is appreciated/ reinforcing	Supportive, mutually respectful
5		30.57 Um, obviously having them(PE) available, the one on one assistance is amazing. Having [Energizer] has been amazing. Yeh he is a face, he is a face of PE. [Energizer] himself has some amazing skills and I think he leads us as such.	Having them (PE) available, the one on one assistance is amazing. Skill development	Provide leadership = substantial relationship with Energizer
5	H	PE resources are extremely useful. Which resources have been particularly helpful? Like the bike day we had. Bringing all those things out is amazing. They always bring own balls, equipment, ideas. Wow, sometimes they get here I think there are too many ideas. Can we filter some out. They are so forthcoming with their resources.	PE resources are extremely useful	substantial relationship with Energizer
5	H	In terms of what they do – everything that they give us " go for it" give it , we will use it , we will adapt it" . The other thing I find about PE, maybe its Energizers's style, we never ever do anything unless we can do it properly. They are flexible	PE are flexible and adaptable	Properly resourced Positive partnership

5	H	Energizer is present in our community so he was present at our swimming sports so parents see him being present which gives him the" face" and gives them ……	The Energizer is "present" in school. He is known by everyone	substantial relationship with Energizer
5	H	It is nice, he is male and we don't have any male teachers. Anna- How often does [Energizer] come to your school P- 3 or 4 times a term. If we are busy on a project, every week. Just depends what we are doing and if he is not here we are emailing each other.	Energizer is in regular contact with school. Involved with school projects. Male in female dominated school seen as positive	Leadership directed at inspiration
5	H	Things like not last year but the year before I stood down 3 students for cannabis. Also I had a child bring some methamphetamine to school. As a principal what do you do, what do you do! I had great conversations with Energizer about those kinds of things. Our children are going to be exposed to drugs, so how can we help them at this young age get that in their heads that…. It comes down to all these things. It is about making sure they are active and fit. If they are seated in front of play- station they are more likely.., there are more pathways they will choose. Energizer knew someone who came in and did a lot of work around leadership with our senior class. Talked about the peer pressure thing. So it was really nice that Energizer had contacts. Linked the work with Energizer and the Deere programme (police programme around drug education).Also linked it to the Life Education Truck. We had all these great people working together and we produced a 10 week programme around drugs.	Energizer worked with school to devise a drug programme	Collaborative, constructive, effective, supportive relationships
5	H	Almost every parent said they wanted it to be taught every second year.	Supportive parents	
5	H	It was a big undertaking and yet I felt confident by these people all being confident with me. (They said "No [principal name, good".) If you believe it is really important to be healthy and you need exercise why are you going to smoke a cigarette? Why would you drink so much beer that your brain is sizzling? It's all those things. It is not to scare kids it is to explain. PE is all linked		
23	H T1 2005	Role modelling- someone who is external to the school, some-one who is role modelling for the kids. Having a person who makes you accountable. They see that person (Energiser) come into the school and it reminds them (teachers) that they should be doing some more activity; that our canteen is important to keep healthy. That kind of thing.	Effective role models Having a person who makes you accountable	Properly resourced programme Accountability

1	H T3 2009	I think it has probably been more effective than "Active Schools" um because Richard is in our face a bit more and he is very giving of time and resources and I just think it is the relationship that we have with him which is a key factor in it being successful here	I just think it is the relationship that we have with him	Supportive relationship with Energizer has been very important

Princ. No	Engagem ent	Quotations : Sustainability	Condensed Meaning	Final Code
5	H	It is hard work though. But every year I think we get a little further. I think the question in the principal's mind. Is this sustainable? We are getting to a point where parts are sustainable, other parts we need to work on. One of the survey (questions) I did with [Energizer] is that nothing is really written. My experience in small rural schools is just because there is a policy does not mean you are going to adhere to it anyway. So I am not so concerned that it is not written as such. Anna what do you mean? P – A policy We weighed up whether that would help sustain it. I am not sure whether it is. I think it is a cultural change more than about writing procedural policy.	A written policy does not ensure change. Change must become embedded in the culture of the school. Change is slow but steady	Thinking about future proofing / sustainability
5		What do you think would help protect the progress made and assist with making further progress? Um, obviously having them available	On-going PE support is important	Support
5		I think you need to make it part of your charter, make it part of our strategic goals, which we have done, and make it something that we report on so that it becomes a cultural shift and just like any cultural shifts you have to put in the sustainability stuff. Like go back and revisit it. How are we going? Do we still believe in this/ do we still value it? If we do value it, what are we going to do ensure that it happens?	Make it part of your charter, make it part of our strategic goals,	Future proofing/ protection
5		Like I have 3 new staff this year and it is like starting all over again. So basically it does take a lot of energy and time from me and my DP. (NB. Principal provides clear instructions to her staff around procedures e.g. water in classroom). It's easy I simply put on the board ALL GLASSES IN CLASSROOMS BY WEEK 2. New teacher asked what does that mean. Every child needs their glass in the classroom, make sure water is available, and make sure they are washed twice a week. It is an expectation of the school. At this school this is what we do!	lot of energy and time It is an expectation of the school. At this school this is what we do!	Commitment underpins sustainability A way of life

Princ. No	Engagem ent	Quotations : **Finances**	Condensed Meaning	Final Code
5	H	We had a football tournament that we ran and we all had healthy food. Wraps, sandwiches – I think we made $230. If we had had sausages we probably would have made $500 -$600.This change in being healthy has actually meant a reduction in money. At the end of the day it is about making sure our children are well for a lifetime. Five years ago we did have sausage sizzles. We had all those things They sell. But if you have the beliefs that we have you cannot go there.	Healthy fundraising is difficult	Absolute commitment

Princ. No	Engagement	Quotations : School Curriculum	Condensed Meaning	Final Code
23	H T1 2005	But we did consultation with our school in terms of our vision and (after numeracy and literacy) health came out on top as a third priority. So we actually teach health 3 times a year rather than the just once a year	Teach health 3 times a year rather than the just once a year. Priority given	Commitment

Princ. No	Engagement	Quotations: Others	Condensed Meaning	Final Code
H	1	It is time…fitting it all in, when you are competing against other curriculum areas such as literacy and maths and um it competes all the time with everything else that we do.Yeh.	It is time…fitting it all in. Still fits in PA etc.	Time a Barrier

Appendix J. Interviewer Scores for Engagement

PrincipalNo	Decile	School Commitment to PE by school leader = prepared to make a stand for PE (be bold, courageous, values and uphold PE philosophy)	Substantial relationship with Energizer and PE -works collaboratively to change	School Commitment by teachers	Evidence of planning, unwritten or written policies to support PE in school	School perceives a need	Evidence of achieving PA due to PE	Evidence of achieving HE goals due to PE	Changes overtime. Made positive progress overtime	Evidence of future proofing	Willingness to change cultural mores	Willingness to overcome barriers	Check
		10	10	5	5	10	12	18	10	5	5	10	100
5	5	10	10	5	5	10	11	18	10	5	5	10	99
14	9	10	10	5	5	10	10	18	10	5	5	10	98
22	1c	10	9	5	5	10	11	16	10	5	5	10	96
20	4	10	10	4.5	5	10	10	18	10	4	5	9	95.5
2	5	9	10	5	5	8	11	18	10	5	5	9	95
23	2	10	10	4	5	10	11	16	9	4	5	10	94
19	3	10	9	5	3	10	10	18	9	4	5	10	93
21	5	10	10	4	4	10	11	12	10	5	5	9	90
1	3	8	10	5	5	8	7	15	10	2	5	8	83
8	1	8	8	5	3.5	5	12	18	9	2	4	7	81.5
24	3	9	10	4.5	2	8	10	12	10	2	5	9	81.5
10	4	8	9	4	3.5	9	12	12	3.5	1	4	6.5	72.5
4	4	7	9	3	4	7	8	17	6.5	1	4	5	71.5
13	1	7	8	2.5	3.5	7	6	16	7	1	5	7	70
18	1	7	8	5	5	10	8	16	8	5	4	6	67
15	7	6	7	4	2.5	6	10	14	7	1	4	5	66.5
17	7	7	7	4	4	8	7	14	5	1	4	3	64
6	6	5	6	2.5	4	6	10	15	5	4	2	2	61.5
12	5	5	10	4	2.5	5	11	8	6	3	1	3.5	59
25	2	4	6	4	3	5	7	12	6.5	2	3	6	58.5
3	3	5	7	4	2.5	5	10	11	5	1	2	3	55.5
11	10	3	7	4	3	5	11	9	4	2.5	2	3	53.5
16	9	5	5	3	2.5	6	8	9	3	3	1	2	45.5
9	10	3	3	2	2	3	8	14	4	1	2	2	44
7	6	3	5	2.5	0	4	8	0	2	0	2	2	28.5

Appendix K. School Stocktake Questionnaire
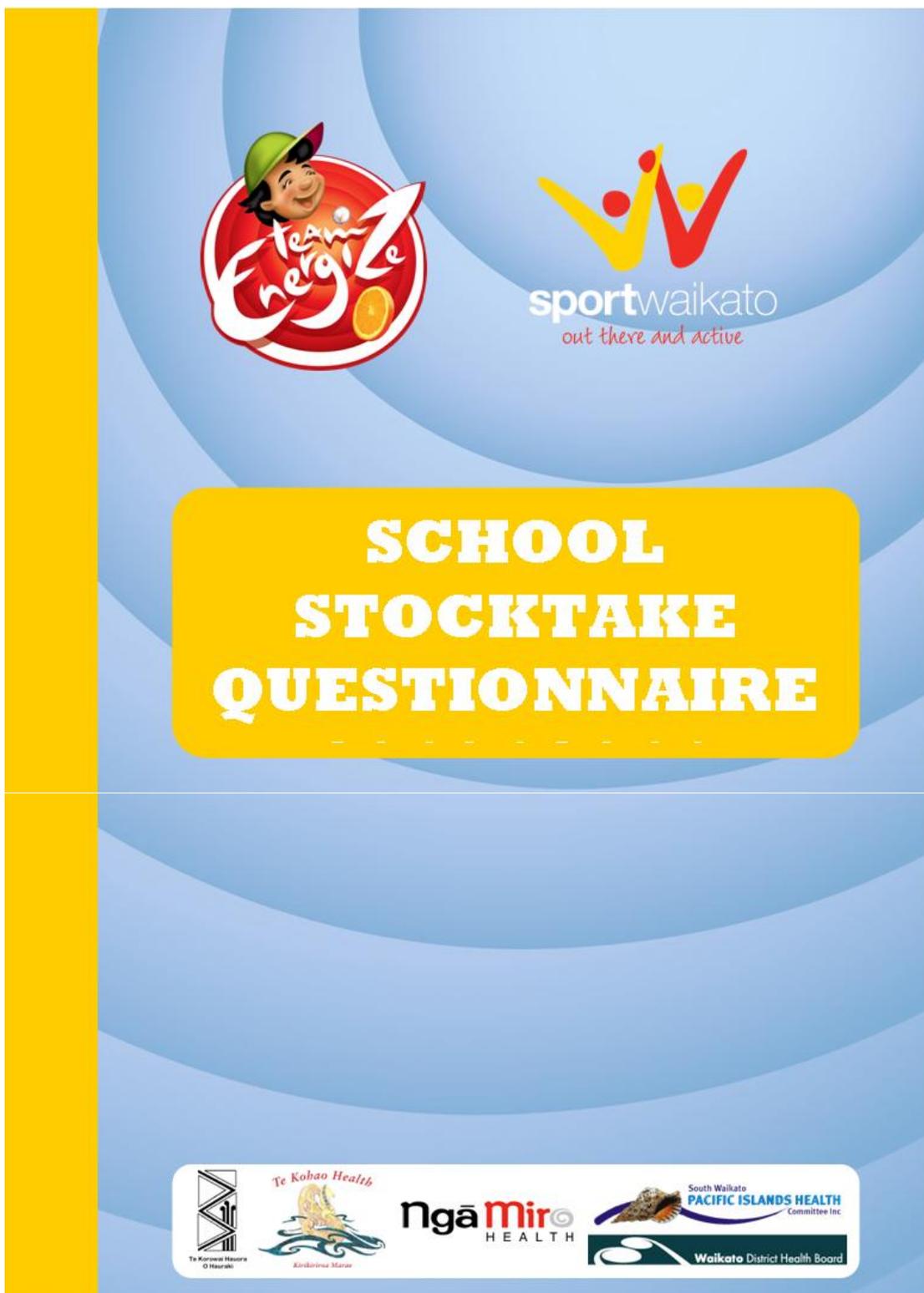
HEALTHY EATING

SCHOOL POLICIES & PRACTICE

10. Does your school have written policies / procedures or unwritten expectations about healthy eating?

Please tick where appropriate:

			Written Policy	Unwritten Expectation	No Expectation
a.	Food brought from home:				
	i.	No packet food	O	O	O
	ii.	No access to leave school grounds to purchase food or drink during school hours	O	O	O
	iii.	No delivery of fast food (fish n chips, burgers, fried chicken etc) by parents	O	O	O
b.	Food available at school:				
	i.	Healthy choices available	O	O	O
	ii.	Reduce amount of high energy/low nutrient food available	O	O	O
c.	Consistent nutrition messages in all aspects of school and community interaction:				
	i.	Food at events	O	O	O
	ii.	Shared meals	O	O	O
	iii.	Fundraising	O	O	O
	iv.	Sponsorship (e.g. no fast food sponsors)	O	O	O
d.	Food / drink in class:				
	i.	Water is available in class	O	O	O
	ii.	Healthy 'brain food' / snacks allowed in class	O	O	O
e.	Other (please specify):		O	O	O

11. To what extent is healthy eating implemented at your school?
Please rate the following:

		Very good	Good	Neither	Poor	Very poor
a.	The level of priority for nutrition at your school?	O	O	O	O	O
b.	The school's practices and policies for the promotion of healthy eating?	O	O	O	O	O
c.	The school management's support for healthy eating?	O	O	O	O	O
d.	The promotion of healthy foods at school social/sporting events?	O	O	O	O	O
e.	The extent to which teachers at the school act as role models by eating healthy food?	O	O	O	O	O
f.	The level of support for healthy eating provided by parents at your school?	O	O	O	O	O

12. With regard to your school's nutrition activities, what was most effective?

_____
_____
_____
_____

13. With regard to your school's nutrition activities, what was least effective?

_____
_____
_____
_____
_____

LUNCH: OTHER

25. Do children have access to a food preparation area for their lunches? ○ Yes ○ No
e.g. fridge, microwave, hot water

26. Since being an Energize school the quality of food brought to school from home has become:

○ A lot healthier   ○ Healthier   ○ No change   ○ Less healthy

FOOD SECURITY: "FREE" BREAKFAST

By this we mean a service for children who come to school without having had breakfast. Those children have a breakfast supplied at no or nominal charge to the child or family.

27. Does your school currently have a "free" breakfast service? ○ Yes ○ No (go to next section, Q31)

28. How many days per week does the school have a free breakfast service?   1   2   3   4   5

29. How many children use the "free" breakfast service? _____

30. How is the "free" breakfast service funded? Tick as many as appropriate

a.	School	○
b.	Commercial Sponsor (e.g. Sanitarium)	○
c.	Other (specify):	○

FOOD SECURITY: "FREE" LUNCH

By this we mean a service for children who come to school with no lunch or money to buy lunch.

31. What ways do you have to address the issue of the hungry child at school? Tick one or more

a.	Children come to reception / staff room	○
b.	External provider e.g. Red Cross	○
c.	Don't know	○
d.	None	○
e.	Other (please specify):	○

PHYSICAL ACTIVITY

POLICY AND PRACTICE

58. Does your school have <u>written</u> <u>policies</u> /procedures or <u>unwritten</u> expectations about physical activity?

Please tick where appropriate:

		Written Policy	Unwritten Expectation	No Expectation
a.	Daily activity (20 mins Huff n Puff)	O	O	O
b.	Lunchtime physical activity at least twice a week	O	O	O
c.	The use of school grounds after hours	O	O	O
d.	Access to equipment at lunchtime	O	O	O
e.	Cycling to school	O	O	O
f.	Hats for outside play	O	O	O
g.	Other (please specify):	O	O	O

59. To what extent is being physically active implemented at your school?
Please rate the following:

		Very good	Good	Neither	Poor	Very poor
a.	The level of priority for physical activity at your school?	O	O	O	O	O
b.	The school's practices and policies for the promotion of physical activity?	O	O	O	O	O
c.	The school management's support for physical activity?	O	O	O	O	O
d.	The level of support for physical activity provided by parents at your school?	O	O	O	O	O
e.	The extent to which teachers at the school act as role models by being physically active?	O	O	O	O	O

60. With regard to your school's "physical activity" programme, what was most effective?

_____
_____
_____
_____
_____
_____

61. With regard to your school's "physical activity" programme, what was least effective?

_____
_____
_____
_____
_____
_____

RESOURCES

62. Rate the adequacy of the following at your school:

		Inadequate	Adequate	Very adequate	Don't know
a.	Area(s) for indoor / wet play	O	O	O	O
b.	Area(s) for outdoor play	O	O	O	O
c.	Outdoor shaded area	O	O	O	O
d.	Sporting and active play equipment (e.g. bats, balls, ...)	O	O	O	O

63. Do teachers get release time from playground duty to organise physical activities/games?

O Yes   O No

64. Do you have sporting fields, hard court and other activities marked out?

		Yes	/ No
a.	Rugby	O	O
b.	Soccer	O	O
c.	Hockey	O	O
d.	Cricket	O	O
e.	Rounders/T-ball	O	O
f.	Tennis courts	O	O
g.	Basketball courts	O	O
h.	Netball courts	O	O
i.	Long jump pit	O	O
j.	Athletics track	O	O
k.	Shotput/Discus area	O	O
l.	Climbing frame(s)	O	O
m.	Swinging bars	O	O
n.	Adventure playground	O	O
o.	Four square	O	O
p.	Throwing targets	O	O
q.	Hopscotch	O	O
r.	Other (please specify):	O	O

65. Has anything changed in terms of equipment purchasing since being an Energize school?
(e.g. greater frequency, better organised, increased budget)

O Yes   O No

66. Does your school have or use a swimming pool?   O Yes   O No (skip next Q)

67. If yes, has your school participated in training such as Swim Start since being an Energize school?

O No   O 1   O 2   O 3⁺ times

68. Since becoming an Energize School we use the following resources

		More frequently	The same	Less frequently
a.	Circuit Cards	O	O	O
b.	Written DEX manual	O	O	O
c.	Jump Jam manual or pack	O	O	O
d.	Kiwisport — Fundamental Skills	O	O	O

Appendix L. Pooled Ideas from School Leaders

Tip Sheets from Schools: Shared Experiences

Garden Initiatives

- Plant seasonal gardens. Students learn to grow their own food, prepare and cook it. Surplus is given to the children to take home to their families (hugely appreciated in low decile schools).
- Surplus produce used to make preserve and then sold to parents. Parents supportive of their children's effort and support initiative.
- Nutrition kitchen used to teach students and families basic cooking skills.
- Harvest celebrations. Each class bring a plate of vegetables they have grown   Bring sandwiches to share.
- Rural school taking advantage of locally grown, surplus fruit.
- Planting fruit trees on school property. Fruit freely available to the children and their families.

Fundraising

- Homemade pizzas instead of sausage sizzles or chocolate bars.
- Fruit kebabs.
- Rural school caters for sale-yard event. Sandwiches, filled rolls.
- Sell Juicies instead of canned fizzy at combined school sporting events.
- Sponsored runathon- students run for 30 minutes and seek sponsorship.
- Catering for community events.
- Mine – pit run/ walk in Waihi. Organised during school day and opened up to the wider community.
- School auction using donations of goods and services from community.

Parent Evenings

- At parent evenings parents are asked to put their name in a box. The winner takes home a box of fruit and vegetables.
- Set up Project Energize displays to inform parents about PE initiatives.

Food for lunches

- Original canteen removed. Freshly prepared affordable sandwiches and filled rolls provided by local café.
- Sushi provided by outside provider.
- Subway provided once a week.
- Friday Lunches cooked at school. All healthy.
- School employs manager to run the canteen. Manager follows Nutrition guidelines.
- Bronze and Silver Healthy Heart Award for schools. The National Heart Foundation (NHF). provides support and guidance on how to change the food environment within the school.

Strategies to promote physical activity

- Project Energize student leadership course. Student leaders run lunchtime activities.
- Male principal playing bull-rush with students at lunchtime.

- Senior school managers coach a sports team. Role modelling.
- Project Energizer organised an afterschool "Boot Camp" for students identified as poorly engaged in physical activity (PA). Principal joined the programme in order to improve personal fitness. Emphasis on fun, participation and fitness. Very successful.
- Each class given a budget to buy sports equipment for lunch-time physical activity. Students organise activities. Effect= raised participation levels, encouraged leadership and ownership of equipment.
- School camps.
- After school club targeting at risk students. Focus is on PA.
- Whanau –Ora -targeting at risk Maori students. Focus on raising self- esteem through PA and life skill development.
- "Craze" lunchtime fun- consists on a range of activities organised for the lunchtime (stilt walking, organised soccer, swimming, ball activities).
- Organized lunchtime competitions e.g. table tennis ladder.

Strategies to promote healthy food choices

- Shared lunch: teacher provides wholemeal bread; students bring a filling ingredient from home. Make sandwiches together and discuss the health advantages.
- Zero waste lunch boxes- Nude lunches.
- Breakfast club-milk, Weetabix, smoothies.
- Water bottles in classroom.
- Water stations in classrooms.
- Buying large bags of carrots (cheap) and leaving them inside the classroom for children to help themselves. Decile 3 school.
- Asking parents to bring Healthy finger food options to parent evening
- Fruit break at 10.am everyday
- In order to reduce litter around the school, if children bring a packaged food item they instructed to eat the food by the rubbish bin. Teachers have noticed a reduction in these types of foods because children do not want to be held up with their play.

- Teachers eat lunch with the children and reinforce the healthy food choices. " Great to see the apple/ carrot sticks in the lunchbox".
- Encourage students to have a lunchbox and talk about the kinds of foods that are appropriate to have in a lunch box.
- Appointing a student nutrition team to survey the school community about the school food environment. Student team makes recommendations to improve the school food environment. Student Voice very powerful.

School-Community initiatives to promote health

- School communities set up Healthy Kai a partnership with food providers to provide cheaper healthier food combos for students. E.g. Filled roll and flavoured milk vs. meat pie and can of fizzy. The school students designed the logo and promotion was through the schools

- Evening cooking classes organised for boys and their fathers (grandfather or significant other). Focus of these classes is to up skill participants and foster healthy relationships.
- School breakfasts organised to strengthen the school community. Parents, whanau, PE Energizer, community personnel invited.

- *Others*
- School breakfasts organised to strengthen the school community. Parents, whanau, PE Energizer, community personnel invited.