CHILDREN'S ENGAGEMENT IN PHYSICAL ACTIVITY IN PRIMARY SCHOOLS

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ABSTRACT

Physical activity is an integral element of early childhood development. Schools are viewed as the perfect avenue to provide children with more opportunities to develop fundamental motor skills and engage in physical activities. Although, an ideologial shift within the education system has placed more pressure on teachers and children to achieve academic success, taking time away from physical activities. Screen-based activities such as video games have also taken time away from physical activity, seeing children spend more time being sedentary. This is having a large impact on children's physical health, mental wellbeing, and socialisation skills. The present research adds to existing literature by exploring the approaches, inhibitors, and potential improvements to the way children engage in physical activity.

Qualitative research was conducted through six interviews and seventy survey responses. The interviews were coded, and uncovered findings within the key themes of approaches, inhibitors, and improvements. The survey findings revealed further similarities and differences between the perspectives of the participants. Overall, the results indicated there was a strong disconnect between the views of experts and parents. This was especially evident when exploring the curriculum, as experts indicated that the curriculum significantly limited the time and flexibility needed to provide physical activity. Whereas, parents tended to think that the curriculum was not the issue, and the popularity of screen-based sedentary activities was the concern. Nevertheless, there was a consensus that physical activity is important and should be incorporated more into the lives of children.

These findings highlight the need for further investigation into how the education system determines the physical activity opportunities available to students. To improve the way children engage in physical activity during their primary school years, opportunities were explored to 1) improve individuals' perceptions of physical activity and 2) incorporate more dedicated physical activity.

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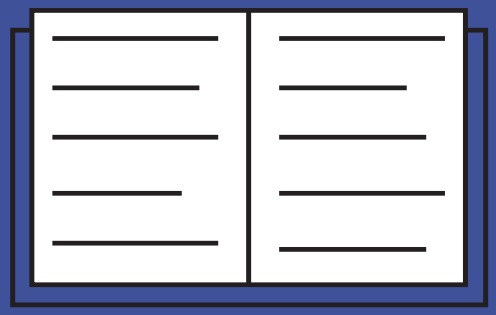

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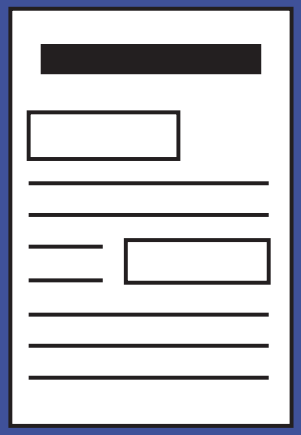

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01
INTRODUCTION

BACKGROUND

Children spend more time participating in sedentary behaviours, such as watching television, playing video games and using the internet, than any other activity outside of sleep (Chinapaw et al., 2011). This causes them to have reduced abilities to perform the gross motor skills that are fundamental to early development. As a consequence, many children are spending more time as onlookers to the physical activities of their peers (Valentini et al., 2016). This dimished participation in physical activity can have further impacts to their physical health, mental health and social skills (Skinner & Piek, 2001). Such impacts can be seen from childhood through to adolescence, and even carrying on into adulthood.

Primary schools provide a setting for physical exploration, as children spend up to 30 hours at school (Grieco et al., 2016). Education systems have tried to implement programs to cater to the World Health Organisation's physical activity recommendations for children (Hnatiuk et al., 2014). Although, schools tend to be more focused on academic subjects due to standardised testing (Grieco et al., 2016). Consequently, children are spending large amounts of time being sedentary during their school days. Teachers are often stretched thin trying to implement physical activity into their classrooms.

Dedicated Physical Education programs engage children and teach essential skills whilst alleviating some of the pressure put on classroom teachers to provide physical activity (Howells et al., 2018). Though, this class commonly happens once per week, not enough to have a dramatic impact on a child's health and instil healthy behaviours. Therefore, there is a potential for classroom teachers and physical education teachers to collaborate, creating more opportunity for children to be active within a school environment.

Children using technology at school. Source: Rioseco et al., 2017

Children are increasingly more sedentary due to academic requirements and screen-based technology. The popularity of watching television, playing video games, and access to mobile phones has provided more opportunities for children to be sedentary, taking away from the time they spend being active (Wachira et al., 2018). This demonstrates a potential for technology to be incorporated into the education system.

Screen-based sedentary behaviours could be targeted and transformed to engage children in physical activity. Technology could be paired with physical activity to allow for an innovative and interactive approach. Technology could enable students to be physically active and allow children to improve fundamental motor skills through gamification. The education system could take this opportunity and implement it within the classroom working alongside physical education lessons to achieve the recommendations of the World Health Organisation. Therefore, there is a need for research into the elements affecting children's ability to participate in physical activity, and the potential for future improvements.

An example of a Primary School Classroom. Source: Virtue, 2020

AIMS

The research aims to understand how children's physical activity is being affected and how it could be improved. A literature review was used to gain a broad understanding on the environmental, societal, and behavioural influences affecting physical activity participation by children. The future implications for the lack of physical activity will also be explored.

Qualitative research will be conducted, aiming to engage with participants working with classroom teachers, physical education teachers, physiotherapists, and parents to gain deeper insights into the topic. In-depth interviews and surveys will be used to conduct qualitative research. This data will then be analysed and discussed. From this, a design proposal will be developed, exploring the potential for design interventions.

RESEARCH OUTLINE

The research explores the topic from seven perspectives:

1. **Children's Gross Motor Skills**
2. **Importance of Physical Activity**
3. **The Education System**
4. **Developmental Coordination Disorder**
5. **Sedentary Behaviour of Children**
6. **Consequences due to Lack of Physical Activity**
7. **Interventions used to Improve Participation in Physical Activity**

These perspectives showcase the importance of children being physically active and developing a healthy lifestyle, as well as how the education system helps and hinders a child's ability to achieve their recommended daily exercise. All seven perspectives are used to identify the importance of children participating in physical activity from a young age, and how further research could improve their participation.

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LITERATURE REVIEW

GROSS MOTOR SKILLS

Gross Motor refers to the fundamental movement skills acquired during infancy and developed throughout early childhood (Esposito & Vivianti, 2013; Luban et. al, 2010). The cerebral cortex in the brain controls voluntary muscle groups, the motor cortex is the region that controls gross motor. The development and refinement of gross motor skills and abilities stems from childhood to adulthood

Gross motor abilities entail the use of large muscle groups that coordinate body movements to perform activities (Esposito & Vivianti, 2013). Locomotor (eg. running and hopping), manipulative object control (eg. Catching and throwing) and stability (eg. Balancing and twisting) are examples of gross motor skill areas (Bolger et al., 2019; Lubans et al., 2010). Fundamental movement skills (FMS) are basic movement patterns that are considered to be building blocks leading to specialised sequences of movements that are often required to participate adequately in many physical activities for children, adolescents and adults.

Students participating in a physical education lesson focussing on gross motor skills. Source: St Therese Catholic Primary School Torquay, 2019.

PHYSICAL ACTIVITY

Children's fundamental motor skills are required to be proficient as they are essential for the engagement in physical activity and exercise according to (Valentini et al., 2016). Children with motor delays tend to spend more time as onlookers as they lack the skills required to participate. Children who participate in physical activity are associated with a greater proficiency in motor skills, and those with lower motor proficiency participate less in physical activity (Lopes et al., 2011).

Physical activity is an important aspect of children's health and development (Grieco et al., 2016). The benefits of regular physical activity for health, fitness and behaviour of school aged children is commonly discussed within the public health context (Lopes et al., 2011). The World Health Organisation recommends at least 60 minutes of moderate intensity physical activity per day for children between 5 and 18 years old (Howells et al., 2018). This has led to many countries implementing national initiatives and guidelines (Daly et al., 2017).

The National Association for Sport and Physical Education (NASPE) in the United States recommends at least 60 minutes of structured and 60 minutes of unstructured physical activity each day and should not be sedentary for more than 60 minutes at a time except when sleeping (Hnatiuk et al., 2014). They also state that Australia, the United Kingdom, and Canada have endorsed guidelines to suggest that children should be physically active for at least 3 hours every day; spend less than one hour a day using electronic entertainment media; and not be sedentary, restrained, or kept inactive for more than 1 hour at a time.

Students participating in a PE lesson. Source: Shutterstock.

Australian states have implemented foundational physical activity into the school curriculum spanning from prep to grade 10.

Despite the benefits of Physical Activity and the guidelines implemented, a significant number of children within Western countries do not reach the recommended daily levels (Pawlowski et al., 2016). In the United States, it is estimated by 12 years of age fewer than half of the children are meeting the recommendation of 60 minutes of exercise per day (Grieco et al., 2016). The debate surrounding the levels and extent of children's physical activity has put pressure on the education system as a potential place to increase these levels (Howells et al., 2018).

DEVELOPMENTAL COORDINATION DISORDER

Developmental Coordination Disorder (DCD), is a term used by the American Psychiatric Association in 1994 to classify children with poor motor coordination (Coleman et al, 2001). Children with DCD demonstrate motor difficulties and learning impairment that interferes with academic achievement and their daily life, affecting activities such as dressing, playground skills, and handwriting (Bo & Lee, 2013). DCD is a chronic health condition affecting school-aged children in large numbers 5-10% of children world-wide, which can affect a child's physical and psychological health (Rivard et al., 2011; Gonsalves et al., 2015). Timely and effective identification of DCD is needed from schoolteachers because without appropriate intervention, these deficiencies could last into adolescence and adulthood.

The motor deficits of children with DCD often include poor balance and postural control, poorly developed hand-eye coordination, longer movement times and problems with timing and sequencing of movements (O'Brien et al., 2008; Gonsalves et al., 2015). Motor deficits experienced by these children can impact their participation in physical activity and sports, and success in academics. Gonsalves et al. (2015) suggest that low confidence and the lack of appropriate motor skills can affect a child's ability to participate in physical activities, therefore, this lack of participation can affect a developing child's ability to learn and practice motor skills. Deficiencies in performing motor skills can have long term effects on children, leading to long term mental or physical health problems.

Paediatric Physiotherapy being used to help a child with Developmental Coordination Disorder. Source: Ashworth, 2018

THE EDUCATION SYSTEM

Schools are recognised as effective settings to promote and implement physical activity initiatives (Howells et al., 2018); (Pawlowski et al., 2016). There is a push to encourage children's physical activity throughout the early years of schooling. Howells et al. (2018) points out that as children spend half their waking hours within a school setting, there is a potential for those 7 hours to set the children up with lifelong habits of physical activity.

School is said to have a large influence on children because of the amount of time they spend within a school. It is also stated that they can be complex and potentially chaotic places. Howells (2018) explores recess and dedicated physical education lessons during a school day as contexts for involving children in physical activity. It is reported that recess accounts for up to 40% of physical activity for children during the course of their day, i.e. almost half of their daily activity comes from what they chose to do at recess (Palowski et al, 2016).

However, the actual amount of activity that children do during recess varies greatly depending on school yard space, facilities, gender and social grouping. This means that for some students, the time that would otherwise contribute a significant (40%) portion to daily activity is in fact sedentary. An example of this can be seen in ***Figure One***: The red, blue and yellow dots indicate the children participating in low, middle or high physical activity during recess at school.

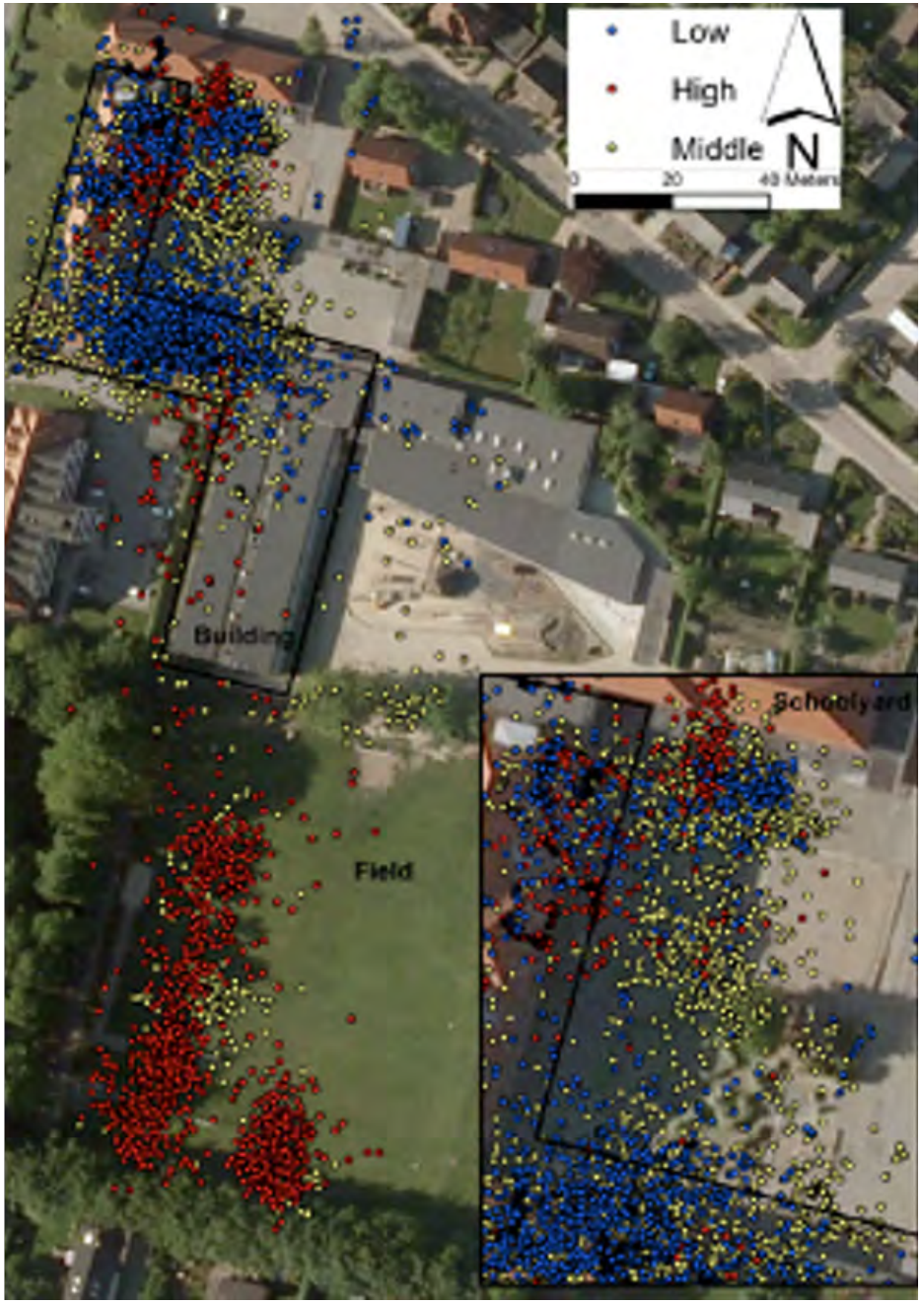


Figure One: *Example of where the low, middle and high PA groups were during recess. Source: Palowski et al., 2016*

Children spend up to 30 hours at school, 92% of that time being sedentary (Grieco et al., 2016). They state it is important to consider interventions to create opportunities for increased physical activity in this contact. The typical strategies of increasing the amount of time spent and intensity of Physical Education classes and physical activity during recess, as these approaches have been met with general effectiveness at increasing children's participation in physical activity overall. The authors state that intervention still needs to target regular classroom education.

Howells et al. (2018) make the claim that Physical Education lessons are the most suitable vehicle to engage children in physical activity and teach them essential skills. Physical Education lessons are designed to encourage and develop the knowledge and skills that will lead to a physically active lifestyle (Howells et al., 2018; Morgan & Hansen, 2008). The World Health Organisation in 2008 suggested the increase in PE lessons was to be a direct and effective way to increase pupils' physical activity.

The high stakes of standardised testing have seen the reduction of Physical Education and recess time in some schools according to (Grieco et al., 2016). The highly competitive school market, which is fuelled by the results of standardised testing, does not benefit from increased Physical Education time. This has left little time within the school day to focus on physical activity. The findings of Grieco et al. (2016) suggests that there may be some benefit to a game-type format in lessons, not necessarily taking physical activity or intensity into consideration, but just a way to reduce sedentary behaviour. This study saw this style of lesson outperform standard sedentary lessons.

Students participating in a standardised test. Source: Voisard, 2014

The successful delivery of a Physical Education program can be affected by those running the program according to (Morgan & Hansen, 2008). In Australian classrooms, teachers usually teach all areas of the curriculum, including physical education. The authors state that there have been serious issues raised by teachers, as they can face difficulties when teaching the program. Some of the major inhibitors include lack of time, expertise, interest, training and resources.

Some teachers are not implementing physical education because they hold negative feelings towards PE or lack the confidence to teach it (Morgan & Hansen, 2008). There are teachers who do not believe that participation in PE has any benefits and put more emphasis on academic curriculum, leading to children being more sedentary during their schooling. Therefore, there is a need to educate teachers to understand the importance of physical education, by demonstrating the fundamental importance of movement skills and potential future problems. Teachers need to be more confident to deliver the curriculum and feel supported by the education system by dedicating more time to Physical Education in the school curriculum.

Physical, social, cognitive and behavioural benefits are recognised by some teachers (Morgan & Hansen, 2008). These teachers believe that implementing physical activity improves children's' performance on academic tasks, concluding that they believe it is a valuable part of the curriculum. This demonstrates that teachers who display a positive attitude towards children's physical activity could be a vessel in promoting the benefits.

SEDENTARY BEHAVIOUR

Sedentary behaviours are defined as a lack of moderate to vigorous physical activity and characterised by little to physical movement (Atkin et al., 2013; Chinapaw et al., 2011). Wachira et al. (2018) categorises sedentary behaviour into screen based (e.g. television viewing, video games and computer use), and non-screen-based behaviours (eg. sitting in school or a car). According to Chinapaw et al. (2011), children in developed countries are perceived to partake in more sedentary behaviours than previous generations. They continue to state that children spend more time with electronic media including television, video games, and the internet than any other behaviour outside sleeping.

Students using a laptop during class. Source: GIE NSW, 2015

Public health agencies are providing more attention globally aiming to promote evidence that supports sedentary behaviours as a distinct health concern, as well as a push for populations to meet physical activity recommendations (Wachira et al., 2018). They state that sedentary behaviours often begin early in life, they can persist throughout one's life and can lead to a loss of health and productivity. Physical activity and sedentary behaviours are two distinct behaviours, but their independent relationship should be studied in the same environment (Katapally & Muhajarine, 2015). Katapally & Muhajarine (2015) reinforce that physical activity has many well-established benefits and sedentary behaviour has emerged as an important factor that influences a range of health outcomes.

Video, computer, tablet and internet games, or the growing saturation of cell phones with built-in games have seen children in developing countries replace the time they would otherwise spend participating in physical activities (Wachira et al., 2018). A study by (Lopes, Lopes et al., 2012) states that sedentary time discriminated children with low and high motor control, stressing the importance of discouraging sedentary behaviour among children. The knowledge of the determinants of sedentary behaviour could contribute towards promoting physical activity, by enabling the development of intervention (Atkin et al., 2013).

Children playing a video game on an electronic device Source: Masterton, 2014

Get Moving! is a classroom-based intervention program designed to increase all levels of physical activity in girls (Spruijt-Metz et al., 2011). This intervention was based on the Self Determination Theory (SDT) & Theory of Meanings of Behaviour. Feelings of satisfaction, enjoyment, competence, and desire to persist are driven by the intrinsic motivation held by SDT. Therefore, according to this theory, people who are intrinsically motivated to be physically active are more likely to engage in physical activity. Get Moving! decreased sedentary behaviour but failed to increase physical activity.

Transform-Us! is a study with a primary aim of determining whether behavioural and environmental interventions within a school and family setting would result in higher levels of physical activity and lower rates of sedentary behaviour among children aged 8-9 (Salmon et al, 2011). Emerging evidence suggests that total sedentary time can be detrimental to a child's health. Both screen-based sedentary time (watching television, playing video games etc) and non-screen based sedentary time (sitting in class, doing homework etc) are impacting the time children are spending performing physical activity. Evidence suggests strategies to reduce sedentary time through school curriculum are having positive effects on children's weight, have reduced tv viewing and increasing physical activity. The final results of the Transform-Us! study can be seen in ***Figure Two.***

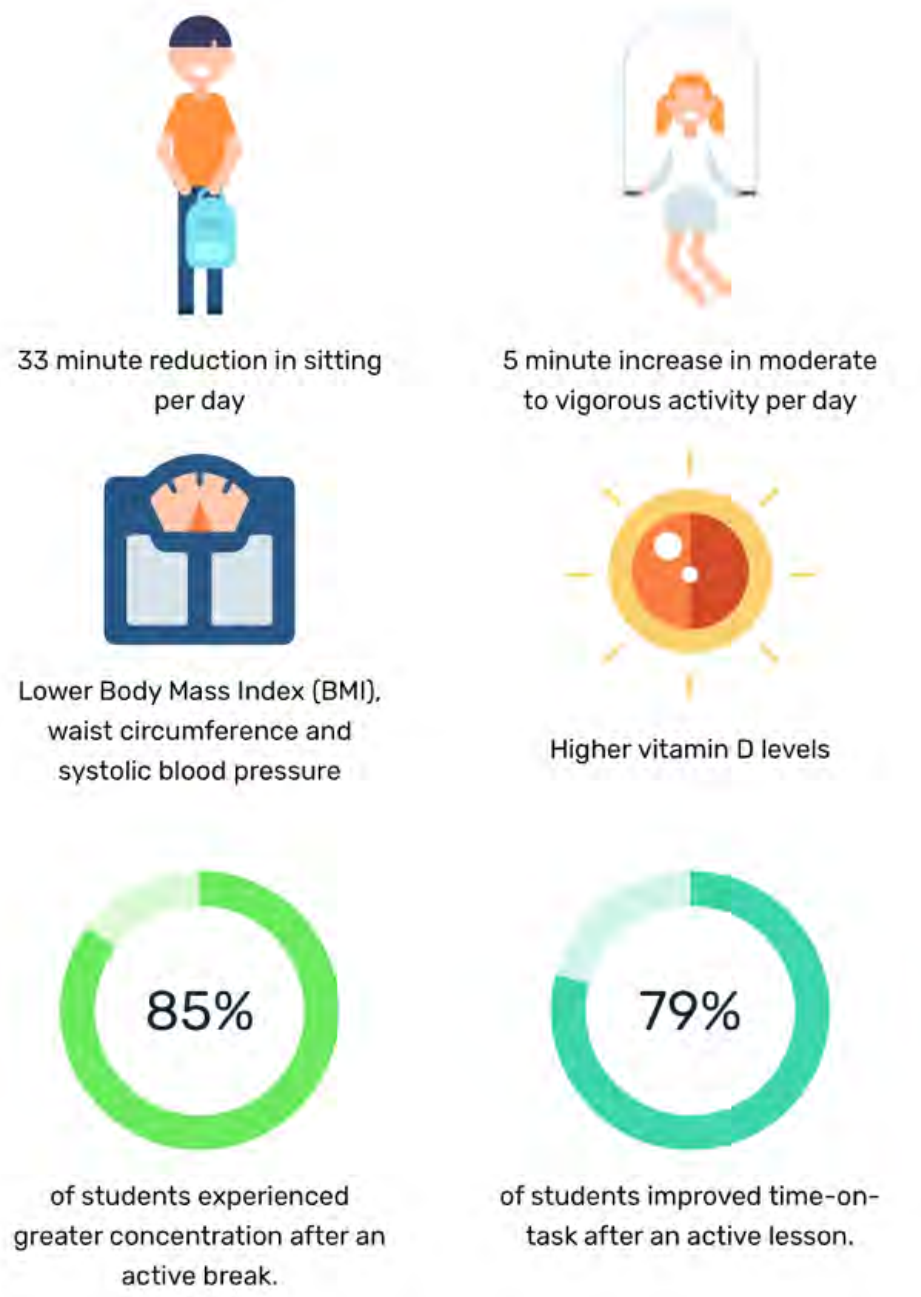


Figure Two: *Transform-Us! Final Results. Source: Transform-Us!, 2011*

CONSEQUENCES

Proficient fundamental motor skills (FMS) are positively associated with many physiological, psychosocial and behavioural benefits, including levels of fitness and physical activity (Bolger et al., 2019; Iannotti et al., 2019). While children may naturally develop a rudimentary form of fundamental movement patterns, a mature form of FMS can be achieved through appropriate practice, encouragement, feedback and instruction (Lubans et al., 2010). Children who do not receive adequate motor skill instruction and practice may demonstrate developmental delays in their gross motor ability (Lubans et al., 2010). Therefore, it is indicated that the development of movement skills should be a key component of early childhood, ensuring positive physical, cognitive and social development.

Physical Health

Physical health can be affected when fundamental motor skills are not learned. According to (Daly et al., 2017), approximately 33% of children in the United States are overweight or obese and the rate of obesity has more than tripled in the last three decades. Limited physical activity and sedentary behaviour play a key role in their weight status (Daly et al., 2017). Engaging in regular physical activity from a young age can offer a range of health benefits including, reduced risk of cancer, obesity and diabetes (Johnstone et al., 2018). Sedentary behaviour has seen type 2 diabetes, elevated blood pressure and low HDL Cholesterol, negative health outcomes historically occurring in the adult population diagnosed in children (Greico et al., 2016).

Mental Health

Withdrawal behaviours, increased aggression and lower language scores often co-occur alongside problems with motor coordination (King-Dowling et al., 2015). Results from a study by King-Dowling et al. (2015) indicate concerns because poor motor abilities tend to persist from early childhood through to adolescents. Several studies show similar associations. When compared to their typically developing peers, children with lower fundamental motor skills tend to have lower language abilities and more emotional behavioural problems. Language impairment in childhood has led to higher rates of anxiety disorders such as social phobia or antisocial personality disorder are displayed in adulthood.

Children with poor motor coordination tend to see themselves as less socially and physically competent than their peers (Piek et al., 2008). Emotions are hard to recognise for these children, making social interactions difficult. Children with DCD were studied and found to have higher reported scores on the anxious-depressed scale when compared to children with higher motor-ability (Piek et al., 2008). The cycle that a child suffering from DCD goes through can be seen in Figure Three. A study conducted by Skinner & Piek (2001) examined perceived competence and social support and their influence on self-worth and anxiety in children and children with and without DCD. Children with DCD were found to perceive themselves as less competent in several domains and having less social support than control participants (Skinner & Piek, 2001). Adolescents also perceived themselves less competent with poorer social support and lower self-worth than younger children, anxiety was significantly higher in this group.

INTERVENTIONS

Physical Education

Planning physical education lessons can be challenging as they need to cater to students of varying developmental levels (Carcola & Romero, 2015). Children with lower motor skills and DCD tend to report lower enjoyment when participating in physical activity because they aren't as successful completing the movements. Five strategies were outlined by Carcola & Romero (2015): group instruction; goal setting/learning; cues of learning, product-based approach, and constraints. They call for a more multi-disciplinary approach to planning and teaching children with fundamental motor problems to ensure they can participate successfully. Collaboration between educators and families can enable a teaching environment that encourages these children to participate. It is important that every child can positively experience physical education and develop skills to enable a healthy lifestyle.

School children playing a ball game during a PE lesson. Source: Healthy Kids, 2015

Classroom-based Physical Activity

Physical Education lessons alone are often not enough to reach the physical activity goals set by The World Health Organisation. Therefore, physical activity programs have been set up for classrooms in order to reduce sedentary behaviours and improve motor skills. Classroom-based physical activity may provide an opportunity for schools to increase physical activity leading to improved academic-related outcomes (Watson et al., 2017).

Three methods explored by Watson et al. (2017) were:

- **Active breaks:** short bouts of physical activity performed as a break from academic instruction
- **Curriculum-focussed active breaks:** short bouts of physical activity that include curriculum content
- **Physically active lessons:** the integration of physical activity into lessons in key learning areas other than physical education

In many studies, including this one, academic-related outcomes improved after participating in classroom based physical activity programs (Watson et al., 2017). Physical activity used to break up lesson time can be used as a strategy to improve on-task behaviour and engage students in lesson content, but more research is needed. Watson et al. (2017) suggests that classroom based physical education may provide a practical, low cost, and effective strategy aimed to increase children's physical activity levels and improve on-task behaviour. Further research is needed.

Kid Fitness getting kids to exercise in class. Source: Betz, 2007

Electronic Gaming

A study from 2007 indicated that 94% of American school aged children had played an electronic game in the last 6 months (Gonsalves et al., 2015). Electronic games have been defined as an interactive activity involving manipulation of figures on a screen. This article states that there is strong evidence that electronic games increase motivation and self confidence in children. Electronic games can also provide immediate feedback about performance, an imported element identified when working to improve DCD according to Gonsalves et al. (2015).

Technology use is increasing within the school environment for both academic support and entertainment. A study by The Gonski Institute for Education (2020), indicates that 43% of Australian teachers and principals believe that digital technologies enhance student's learning and their teaching, while 84% believe that these technologies create a distraction within the learning environment. 78% of teachers state that a child's ability to focus on educational tasks has decreased due to technology, 59% observing a decline in student's overall readiness to learn, as seen in ***Figure Three***. Technology may be negatively impacting some student's ability to learn and participate in physical activity, but the appropriate use of technology has been seen to improve them. Therefore, technology could be used to support physical education alongside its use for academics.

Traditional electronic games are controlled with gamepads, joysticks, computer keyboards, mouse or game controller (Gonsalves et al., 2015). There is limited gross movement when using these gaming controls as only fine hand movements are required.

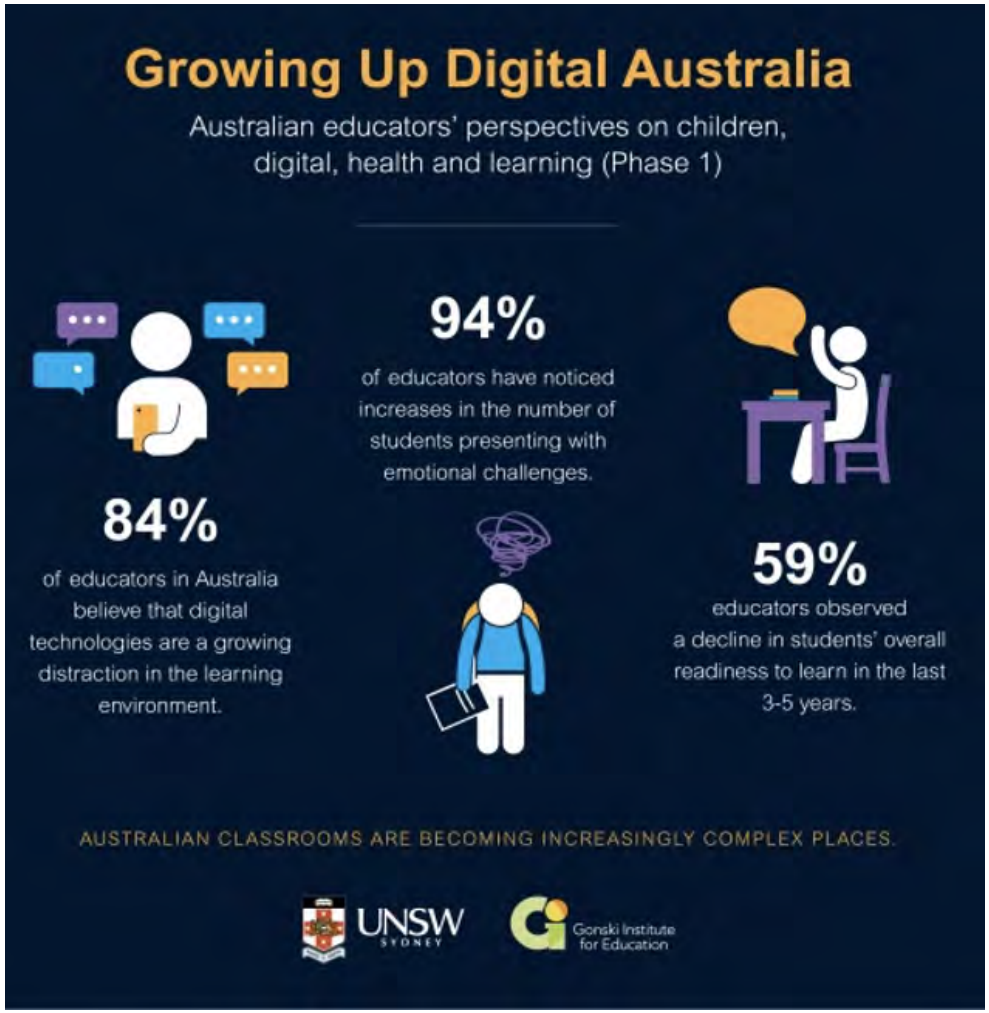


Figure Three: *Australian educators' perspectives on children, digital, health and learning (phase 1). Source: Gonski Institute for Education, 2020.*

This article states that active virtual reality gaming (AVG) is an emerging trend, and recent studies have found that AVG could be used as an intervention. Improved endurance, coordination, and balance have been identified in children with Down Syndrome and Cerebral Palsy. According to Gonsalves (2015), AVG could be useful when providing therapy, as participation in physical activity can be gained as well as psychological benefits. It is stated that though AVG seems promising, little is known regarding the movement patterns utilized.

Traditional Physical Education activities do continue to work well for some children but there is potential for e-gaming to provide supplementary support alongside PE for various sub-groups of children (Miller et al., 2013). The increasing popularity of E-gaming has seen it become adjunct to conventional school PE programs by offering an innovative way of promoting physical activity within school and outside. E-games may hold appeal for a wider range of children unlike traditional sports that require complex skills and coordination or activities that require a lot of standing in line.

Unlike traditional electronic game use, VR game interfaces may provide new opportunities for motor skill development leading to increased motor coordination, increased physical activity, and improved mental health outcomes (Straker et al., 2011). Today's student has never known a world without technology (Bruno, 2018). The constant innovation in technology has led to an era of learners who tend to have more noteworthy levels of technological understanding than their instructors. Therefore, there is potential to implement these technologies to create innovative and modern age physical education lessons.

Gamification is often used to engage users to promote the participation of physical activity through the use of game design elements (Zuckerman & Gal-oz, 2014). User motivation is believed to be affected by gamification, seeing users become more active. An augmented reality game Pokémon Go uses a live-feed global positioning system (GPS) to place Pokémon within a real world setting for players to find and collect (Bruno, 2018). This game has led to a significant increase in physical activity with engaged users over a period of 30 days as reported by Althoff (2016), seeing increases in their activity by 1473 steps a day on average, a more than 25% increase in some users.

Kids playing Pokémon Go. Source: Hill, 2016

LITERATURE REVIEW SUMMARY

Physical activity is an important aspect of life for primary school children. The current education system and technology has led children to participate in more sedentary behaviour than previous generations. Currently children are not achieving the recommended daily physical activity requirements. Classrooms could become avenues to increase physical activity participation and stop kids being sedentary for long periods of time.

Video games are becoming increasingly more popular, replacing the time children spent being active with increased sedentary time. Gamification and technology could be used to engage children in physical activity. Technology could provide instruction, guidance and feedback to children to help improve skills and promote physical activity. Therefore, there is an opportunity for technology and education systems to combine to provide physical education and pique the interest of students.

03

RESEARCH DESIGN

RESEARCH SETTING

Primary schools provide the setting for the research. Children spend a vast amount of time within a school setting and already provide opportunities for children to be physically active through equipment, playgrounds, and physical education classes. Sedentary class time and technology have caused children to reduce their physical activity during school hours. Therefore, educators of primary school aged children could implement new technologies and methods to improve physical activity within a school context.

Example of a contemporary classroom setting. Source: Churchie, 2018.

RESEARCH GAP

The research will explore whether technology and gamification could be used by teachers within a classroom to improve children's participation in physical activity. The potential opportunities for physical activity within the strict curriculum guidelines will also be investigated.

RESEARCH AIMS

The research topic aims to identify how educators approach teaching children fundamental gross motor skills to improve time spent being physically active. The proposed research aims to answer the following questions:

1. **What are the different approaches to developing children's fundamental motor skills?**
2. **How are educators engaging children in physical activity?**
3. **How might educators evolve their methods, using innovation to improve physical activity in children?**

These questions will provide insight into different methods that could be used to improve current approaches to improving physical activity participation. The research methodologies chosen will reveal in-depth answers, providing opportunities for further exploration.

04

RESEARCH METHODS

RESEARCH APPROACH

Qualitative research was conducted to explore the topic from a human perspective. Qualitative research methods intend to derive meaning that is socially constructed from how individuals interact with the world (Oliver-Hoyo & Allen, 2006). Participants were able to provide opinions, impressions and viewpoints, enabling the development of ideas. The motivations, thinking, and attitudes of participants can expand the depth of understanding.

Quantitative data and the information discussed in the literature provided a foundation for the qualitative research. The questions developed for the qualitative research methods will be guided by the data and information. These two methods will work as a team, uncovering new problems and opportunities.

Triangulation was used when analysing the data to enhance the credibility of the results, demonstrated in ***Figure Four.*** This can be compared to a large sample size when conducting quantitative research. Triangulation is a technique that uses two or more sources to validate data through cross section verification. The data collected was carefully reviewed through different methods to achieve a more accurate and valid estimate of qualitative results for a particular construct (Oliver-Hoyo & Allen, 2006). These methods addressed participants from two different standpoints, either providing broader research and detailed participant views.

The use of open and closed ended questions worked together to navigate the research and provide opportunities for discussion. This allowed for easier analysis of the data, pinpointing connections and drawing conclusions. Understanding and exploring different user perspectives through qualitative methods can help uncover blind spots and potential opportunities. Therefore, the information presented by the participants is very important and has been considered when researching.

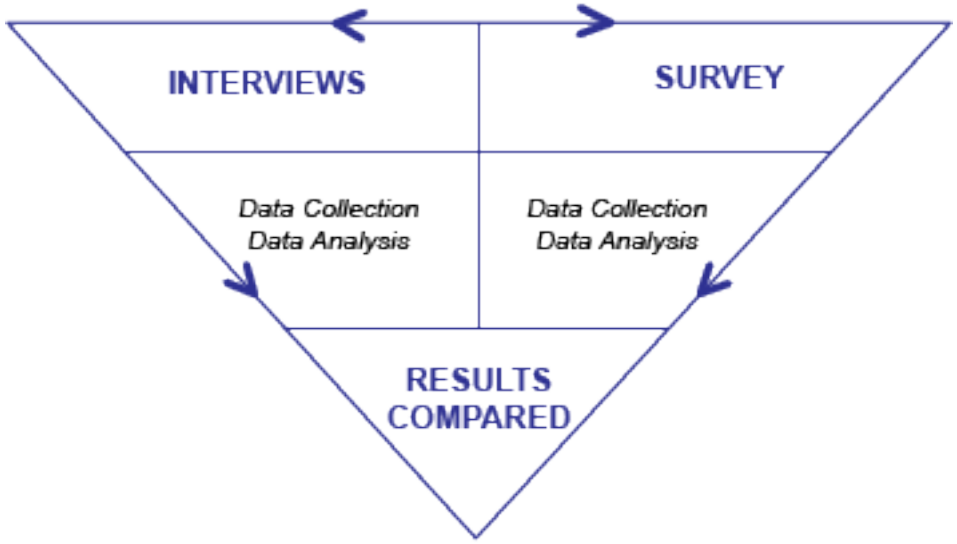


Figure Four: *Triangulation Method of Data Analysis*

RESEARCH FRAMEWORK

Semi-structured in-depth interviews and surveys were chosen to conduct user research. These methods allowed for broad user feedback, as well as specific user and anonymous engagement. The different participant perspectives were used to develop a greater understanding of the research problem. The research framework can be seen in ***Figure Five.***

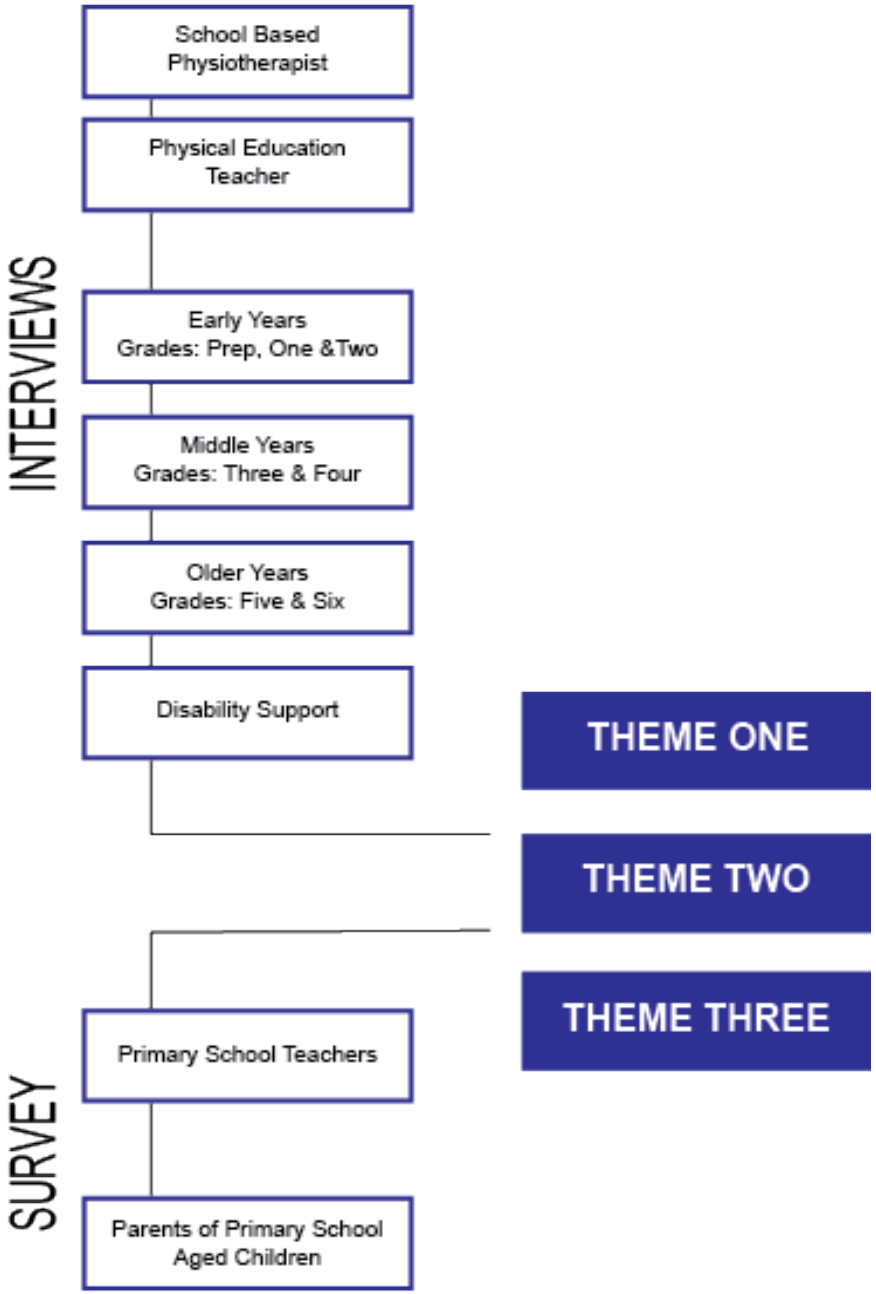


Figure Five: *Research Framework Outline*

SEMI-STRUCTURED INTERVIEWS

Semi-structured Interviews are effective at uncovering drivers behind human behaviours. Personal experiences, points-of-view, and ideas can be developed within an interview setting. Conducting an interview can be complicated. It was important for the interviewer to establish a rapport with the interviewee to allow for natural discussion. The relaxed structure provided more opportunities for participants to discuss and reflect on questions, although it is important for the conversation to be focussed and relevant to the topic. It was important for the interviewer to not sway the opinion of the interviewee as the research results would not be accurate.

Prodedure

Recruitment emails were sent out to interviewees asking if they would like to participate in an interview. Interviewees were chosen because of their individual experiences within the education systems in Australia. When the participant agreed to an interview, an ethics form was sent to them, outlining the aims, methods and potential opportunities to be considered. Interviewees sent back their ethics form at the completion of their interviews. Interviews were conducted over a period of 20-30 minutes, longer if needed. This allowed for a deeper analysis of the questions and further exploration of approaches, inhibitors and improvements to engaging children in physical activities. The flexibility of the structure allowed for further discussion of the topic, as time was provided to participants to emote their opinions. This discussion enriched the data, and allowed for the opportunity to uncover blind spots and new ideas.

Participants

The in-depth interviews were conducted with classroom teachers, physical education teachers, and physiotherapists. These participants at the time of the interview worked within the education system and had experience with engaging children in physical activity and improving their gross motor skills. These participants represented a cross-section of users that had broad knowledge on the topic and would be likely to incorporate new approaches towards increasing children participation in physical activity.

Limitations

Interviews were limited by time and question structure, although this limitation was reduced by the nature of a semi-structured approach. The structure of an interview can influence the information presented, as well as how much time is available to complete the interview. Often, once the interview has been completed, further discussion and insights are explored because the environment is more relaxed. Therefore, it was important to consider this and note this discussion. The interviews were also limited by access to participants. Participants have busy schedules and the interview completion had to take that into account.

ONLINE SURVEY

The survey was used to provide an indication of general feelings, explore topics discussed in the interviews, and expand the reach of the research to more participants. On the basis of the results from the in-depth interviews the main themes found were verified in an online survey to parents of primary school aged children. This allowed for the triangulation of the results. The survey design was intuitive and structured to enable easy completion. The questions were multiple choice using a likert scale or check boxes, one question did ask that the participants expand on an answer via a short response.

Prodedure

Google forms were used to create the survey. It is a free online platform that allows for a variety of response options and doesn't impose strict question limits. Google forms were intuitive to use, both when designing the survey and completing it. The participants of the survey received access through social media, emails and online sharing platforms. The participants participated on a voluntary basis similar to the in-depth interviews. Participants who completed the survey were presented with the knowledge that their submission of the survey indicated that they agreed to participate in the research, as well as a brief introduction to the topic being explored. This information was provided at the start of the survey to make sure participants know the context and general theme of the research.

Participants

The prerequisite for the survey was that they needed to have children or teach children of primary school ages. The survey aimed to address a wide audience of parents and teachers who could provide broad knowledge of current education systems, children's physical activity, and their personal experiences or opinions. These participants were anonymous. This allowed participants to answer questions or provide feedback without bias.

Limitations

It is important to know what to ask when conducting a survey. Therefore, the questions and responses from the interview were used to create the survey. This means that several interviews had to be completed before the survey was released. This reduced the time the survey was active for, potentially reducing the number of responses. It is important that these questions were relevant and easy to understand, making sure the survey could be completed successfully. This ensured that accurate and viable responses were collected.

RESEARCH METHODS SUMMARY

In-depth semi-structured interviews and an online survey were used to collect qualitative data. This research explored a research gap, which investigated how research participants' current approaches to physical activity could be improved to encourage children to increase their participation. Triangulation was used to analyse and draw conclusions from the two data sets. This process enhanced the validity of the data collection.

05

ANALYSIS & FINDINGS

DATA ANALYSIS

A Thematic Analysis was used to analyse the qualitative data collected from the interviews and survey responses (Nowell et al., 2017). A Thematic Analysis was selected because it is widely used to analyse qualitative research, as it can be conducted systematically. This method allows the researcher to become the instrument for analysis as they make the judgements about coding, theming, decontextualizing, and recontextualising the data. The perspectives of different research participants can be examined using this method, to highlight similarities and differences, and generate unanticipated insights.

This research was conducted with an applied focus on How Children engage in Physical Education in Primary School. Nowell et al. (2017), provide a framework that gives a step-by-step approach to conducting a trustworthy thematic analysis, as seen in ***Figure Six.*** Consequently, this was the framework for a thematic analysis used to analyse the collected data.

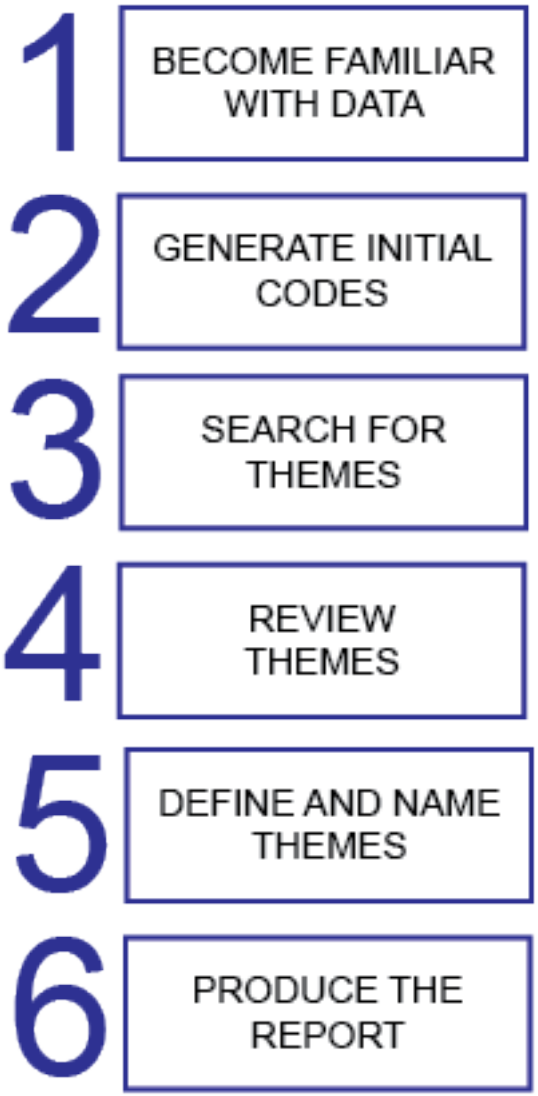


Figure Six: *Approach to Conducting a Step-by-step trustworthy thematic analysis adapted from: (Nowell et al., 2017)*

For the semi-structured interviews, the Otter.ai software was used to dictate and record the interviews. This allowed for the data from the interviews to be transcribed more efficiently. A transcript of each of the interviews was placed into NVivo, a data analysis program. The transcripts were coded by looking for words and short phrases that were salient, meaningful, or added insight into the research gaps identified within the literature review (Saidana, 2013). The codes were then refined to develop categories, which then uncovered themes, as shown in ***Figure Seven.*** This process can be viewed in the appendix.

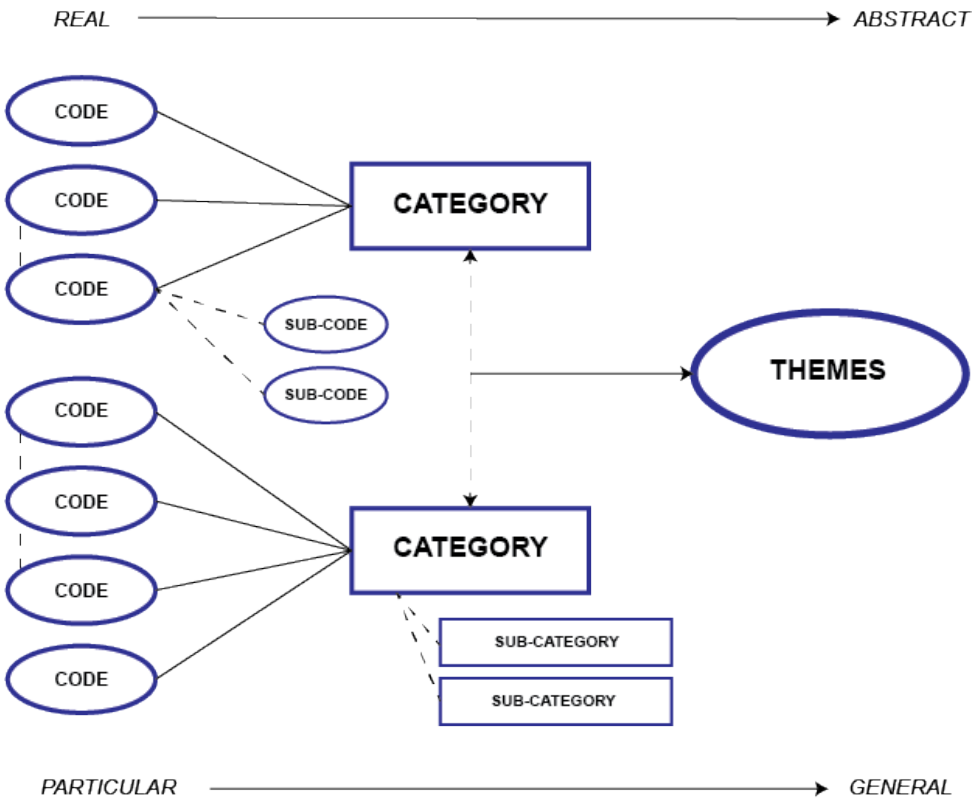


Figure Seven: *Streamline codes-to-theory model for qualitative inquiry Source: (Saidana, 2013)*

The survey was created using Google Forms software. As participants completed the survey, the data for each question was analysed. The results were presented for each question asked in the survey and as an overall summary for each question. The overall summary generated by Google Forms was the most useful, as it allowed for the responses to be compared easily as it shows data in pie charts. The results for each question were represented using different colours, percentages of people, and the number of people who selected each response. The results can be viewed in the appendix.

EXPERIMENT SET-UP

Semi-structured interviews were conducted with six participants. These participants included four classroom teachers who work with students within different grades, a physical education teacher who specialises in school-based physical education programs, and a school-based physiotherapist who works with teachers and students to provide programs and activities to students who require assistance with their physical skill development. These participants have extensive knowledge of children's engagement in physical activity wihtin primary schools. Three main questions were asked exploring approaches, challenges, and improvements. Relevant questions were used to explore the research gap. The questions and the interview transcripts can be viewed in the appendix.

70 parents and teachers of primary school aged children participated in the survey. The survey asked 14 questions separated into two sections. The first section asked participants to indicate how strongly participants agreed or disagreed with the following statements using a 5-point Likert scale. The second section saw participants explore how their children engage in physical activity, by selecting options and writing a short response. The questions asked and the data collected can be seen in the appendix. Parent's and teacher's perceptions of the curriculum, children's participation in sedentary behaviours, available equipment, the use of technology, different types of physical activities, concerns, and potential opportunities were assessed within the broader audience.

EXAMPLE OF INTERVIEW QUESTIONS

Tell me about your experience and approaches in engaging children in physical activity at school?

Tell me a little about your biggest challenges with engaging children (using the answers from the last question)?

Imagine you have a magic wand; how would you go about solving some of the challenges you mentioned (from question two)?

EXAMPLE OF SURVEY QUESTIONS

I believe that the current Australian Curriculum incorporates physical activity well...

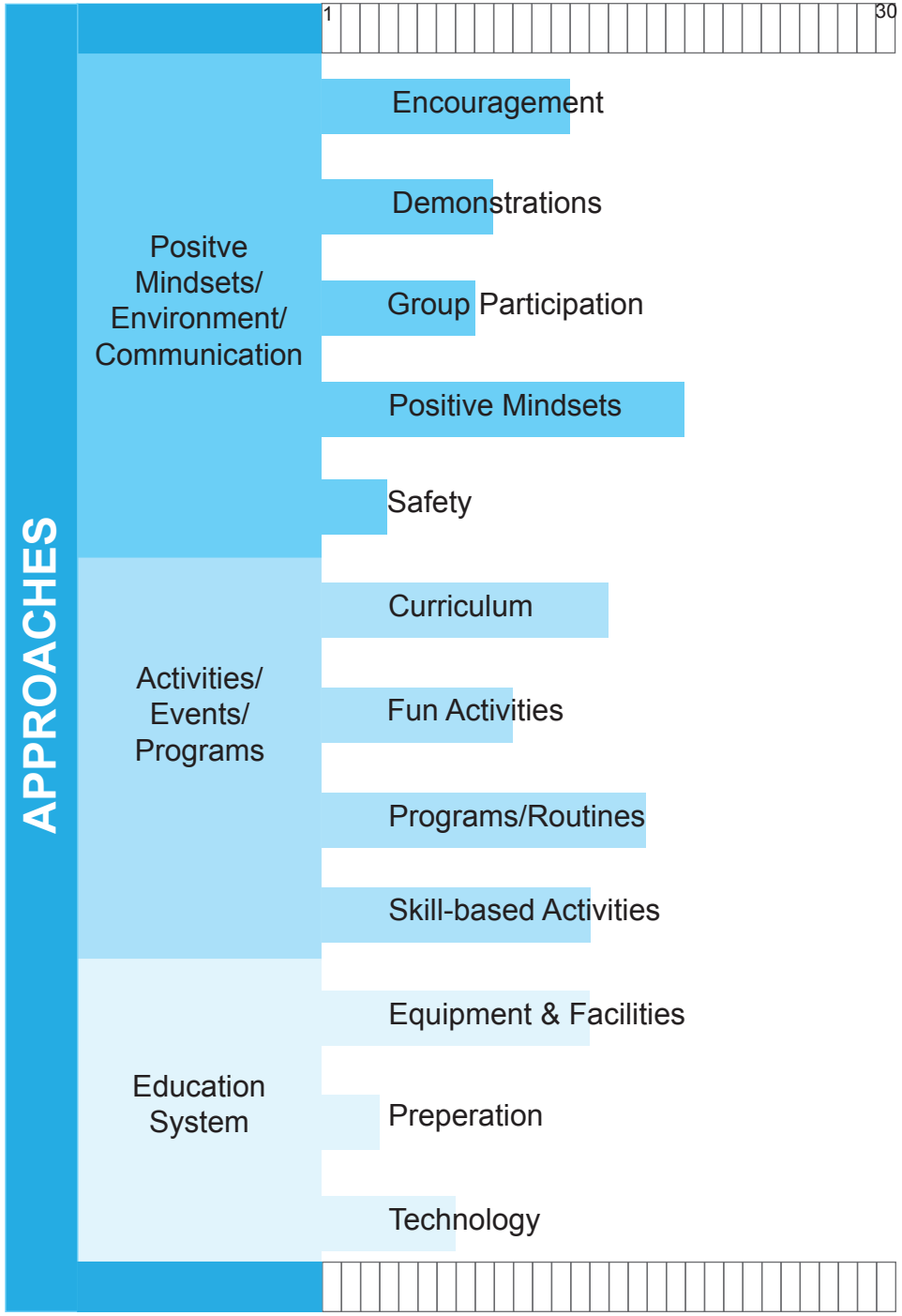
I believe that screen-based sedentary activities can have an impact on a child's ability to participate in physical activities...

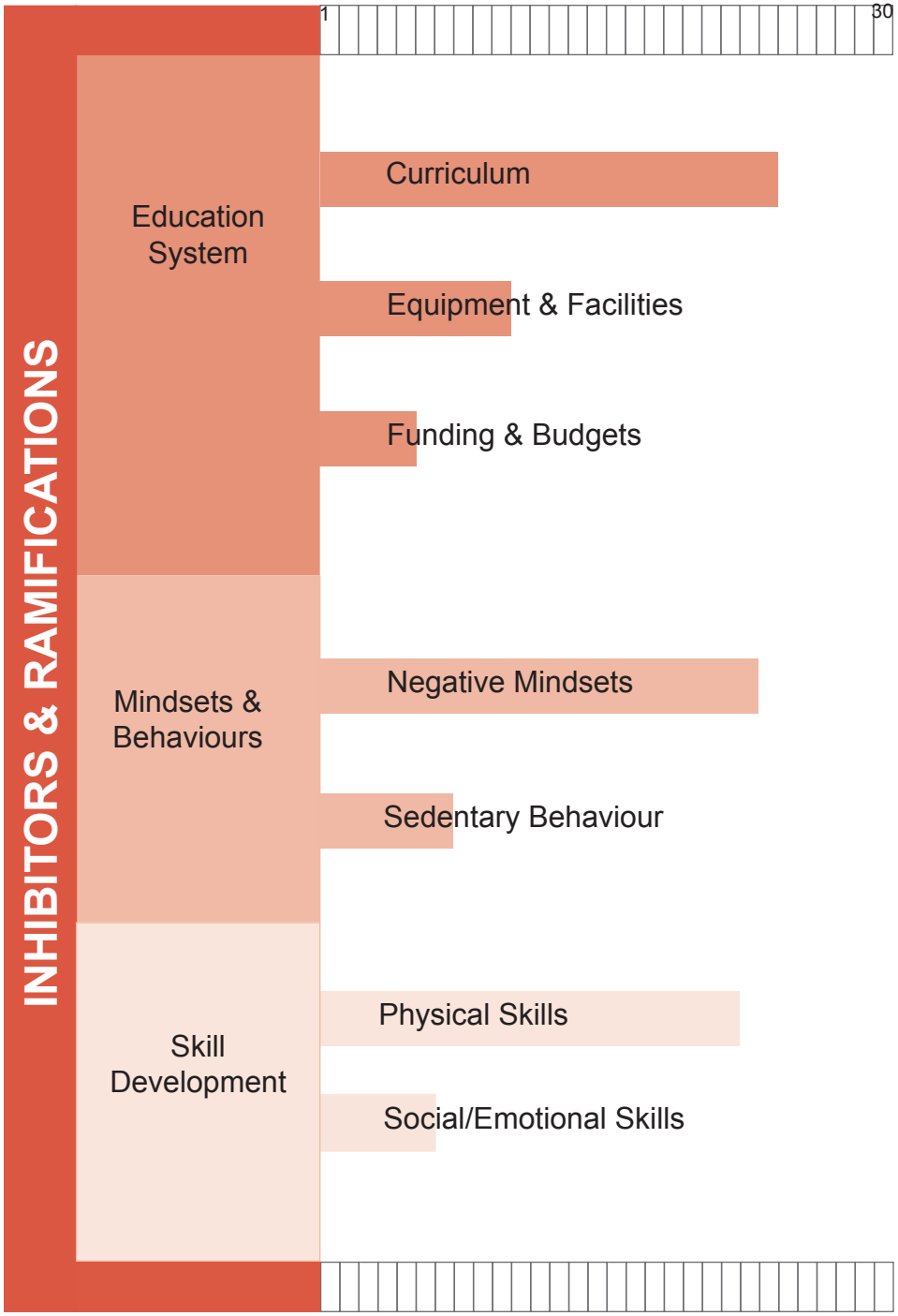
My children regularly participate in the following activities at school...

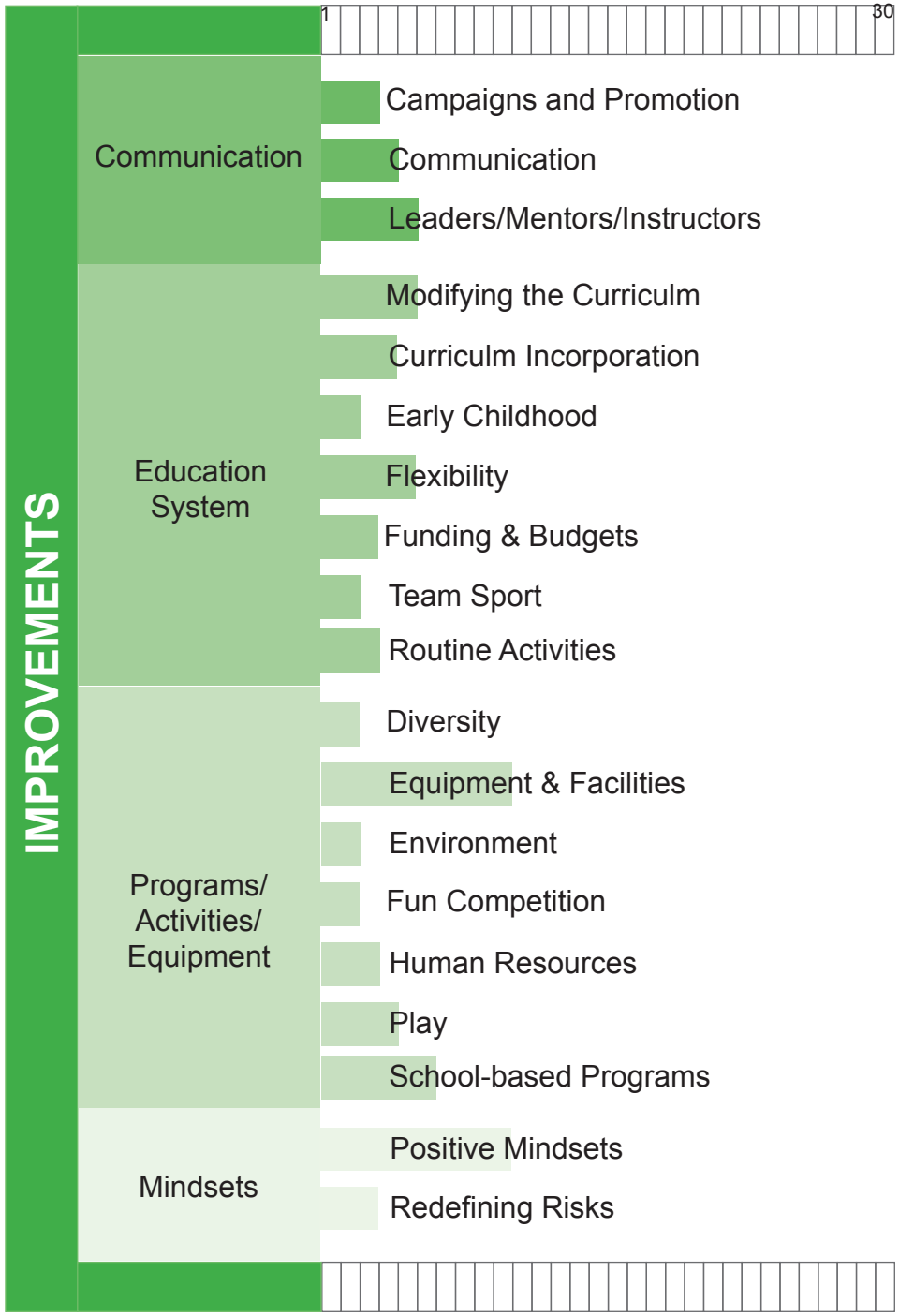
If more physical activity was to be introduced into the curriculum, I would be most interested to see...

KEY INTERVIEW FINDINGS

Six interviews were conducted. Four participants were classroom teachers, another was a Physical Education teacher, and another a school-based physiotherapist. These interviews demonstrated the different approaches, inhibitors and ramifications, and potential improvements to how children currently engage in physical activity in primary school. The findings are identified according to these three themes. The following figures depict, horizontally, the cumulative frequency of codes created from interview transcripts.




INHIBITORS & RAMIFICATIONS
1
30
Education System
Curriculum
Equipment & Facilities
Funding & Budgets
Mindsets & Behaviours
Negative Mindsets
Sedentary Behaviour
Skill Development
Physical Skills
Social/Emotional Skills


IMPROVEMENTS
1
30
Communication
Campaigns and Promotion
Communication
Leaders/Mentors/Instructors
Education System
Modifying the Curriculm
Curriculm Incorporation
Early Childhood
Flexibility
Funding & Budgets
Team Sport
Routine Activities
Programs/ Activities/ Equipment
Diversity
Equipment & Facilities
Environment
Fun Competition
Human Resources
Play
School-based Programs
Mindsets
Positive Mindsets
Redefining Risks

APPROACHES

The interviewees discussed multiple ways they approach engaging children in physical activity. The first was by providing activities, programs, and events within the curriculum and education system to encourage students to get involved and improve their gross motor skills. This was often supported by a routine to ensure that students were participating in physical activity and they were prepared to participate.

The second is developing positive mindsets to create a safe environment for children to feel confident enough to participate fully. This involves effective communication, whether that is positive encouragement, demonstrating skills, or being honest about the difficulty to create trust and develop a supportive environment.

The third was equipment and facilities that are available to staff and students. Playgrounds, sports equipment, and interactive whiteboards, are often used to engage children and help develop skills. The ability to purchase equipment is usually dependent on budget allocations and access to funding.

SKILL DEVELOPMENT ACTIVITIES AND PROGRAMS

"There's two things that I like to do… the one that I'm used to doing and that I've done for a few years is obstacle courses or gross motor circuits. And that's where I'll find out what the teacher is wanting help with… I'll develop a programme for the whole class, but I'll target those skills that the students that I'm referred to are particularly struggling with and need to know. I like to recommend at least two or three times a week to get the kids moving, but at least once a week to do the programme…. I like to include something that's jumping, coordination, motor planning, balance, and strength. Trying to include something from all of those areas into each programme just to get a well-rounded programme." - School-based Physiotherapist

ENCOURAGEMENT AND SUPPORT

"So, I think it's about encouraging children, and getting them involved, but I think it's sort of a teacher's job to try and teach kids how to be patient with other kids that aren't able to do the skill as well as they can. I think that's probably my biggest responsibility is to actually keep encouraging kids that even when they fail, and I can't do a skill to break it down for them enough that they can actually learn it and become better at it. And not to give up." – Teacher One

EQUIPMENT USED TO INCREASE ENGAGEMENT

"(Teachers) often use... I think it's called Go Noodle, or the other one that's good, is like clips of the Just Dance video games, people have put those on YouTube and the kids usually really like them because they can actually copy. The whole point is that they can mimic what's happening on the screen".

- Teacher Four

INHIBITORS

There were three main inhibitors identified by interviewees. The first was the restrictions imposed by the education system. The participants indicated that they are often given limited opportunities to implement physical activities, either due to lack of time and limited flexibility within the curriculum.

The second is the mindsets and behaviours of both staff and students as this can impact their approaches to physical activity in a negative way. The mindsets have been affected by individual beliefs and interests that have evolved over time. Children are becoming more interested in screen-based sedentary activities instead of physical activities, and teachers are focusing more on academic lessons that are sedentary, due to the perceived pressure on them to cover all areas of the curriculum.

Skill development is the third inhibitor and the major ramification identified. Many current students do not have the appropriate gross motor skills when they come to school, and aren't provided at school with enough opportunities to develop these skills. Therefore, children are struggling with not only their gross motor skills such as kicking, catching and throwing, but they are also having trouble with fine motor skills such as writing as well. This means that the classroom teachers in particular need them to sit at their desks and write, but they do not have the ability to have the correct posture, or have the dexterity to hold their pencils and write. Ultimately this is resulting in children developing bad habits and not achieving the academic standards that the curriculum requires, which can reflect badly on them and their teachers.

CHANGES TO THE CURRICULUM

"Now that prep has come into play, most schools have a greater push for their curriculum, and unfortunately (academic subjects) have all sort of taken precedence over the gross motor activities… I feel like the skills we valued when I was a preschool teacher have basically slipped through and now are at the bottom of the list". - Teacher One

ACADEMIC PRESSURES

"I have a lot of past teachers that have just gone, "I'm too busy I can't do that". So even though I'm trying to say we don't have to extra you just have to change the curriculum activity to fit it all in. They aren't at a point where they can kind of think reflectively about that sort of stuff and they are just under a lot of stress". - School-based Physiotherapist

SCREEN-BASED SEDENTARY BEHAVIOUR

"Most (primary school students) would probably prefer the iPad, or the computer, rather than going outside and playing sports". – Teacher One

LIMITED SKILL DEVELOPMENT

"So (students) haven't established dominance. And unfortunately, that becomes like a battle because the teachers then need them to write and they need them to be doing this, so they're showing them pencil grips but, and I know where talking mostly about gross motion but this just as an example. You know, grip is quite developmental. you've got Parma grasp and then you hold the end of the pencil and finally get to the tripod, sort of thing. But teachers and parents are trying to get the kids to do the grip, but they haven't done all of the skills that are the strength things before. And it's the same with gross motor,, like how are you going to get core strength when you've, you know, you lay on the floor to play your games or you slump back in the chair or. So, there's a lot of that. We're seeing a lot of that at school now". - Teacher Three

IMPROVEMENTS

There were four main areas for improvements suggested by interviewees. The first was to change the focus of the education system. Shifting the focus away from academic success, and towards a more holistic education system. This could take pressure off teachers, allowing them to experiment and design programs suited to their specific set of students.

The second is having the appropriate equipment and space to run programs and activities, especially when developing skills. Students should also have access to equipment at home so they can develop their skills before coming to school, and they can practice the skills learned at school at home. If children don't have access to equipment, they cannot learn skills such as catching, kicking, throwing, climbing, etc.

Improving communication is the third opportunity. This could be between educators, between educators and children, or between educators and parents. By improving communication it could allow for physical activity to be incorporated more. It could also work to refine elements within the curriculum, discuss new ideas, develop programs, provide encouragement, demonstrate skills etc.

Communication and the education system also links into the fourth improvement, mindsets and behaviours. The mindsets of individuals can be difficult to shift. Therefore, If what individuals find important within the curriculum is redefined, and physical activity is enouraged more at school and outside of school, the engagement of children in physical activities will improve..

CHANGING THE EDUCATION SYSTEM

"That kids aren't just assuming the lesson has to be sitting down, listening to the teacher or looking at the whiteboard. Have that, have the ability to plan lessons that aren't sedentary activities, and to encourage movement more in other areas of life as well...A new focus for the education system… More room in the curriculum... Shifting thinking towards using movement as a tool". - School-based Physiotherapist

EQUIPMENT AND RESOURCES

"If I have the equipment available that I needed, whenever we need it. To buy anything we needed. So even things like... at our school doesn't even have to be ramped down to the oval, like there is no path." - School-based Physiotherapist

REDEFINING RISKS THROUGH COMMUNICATION

"Telling kids what to do all the time with no explanation: Yeah and that's the kind of thing where it's like, it doesn't make any sense. And then we all wonder why the kids have gross motor difficulties and they're not risk takers and they don't know how to problem solve a particularly risky situation. "Well we told you couldn't do it, so that's why".

- Teacher Four

SHIFTING MINDSETS TO SEE THE POSITIVES

"I'm finding that when I have kids coming to my classes now, I usually have two groups. I have the groups that are 'Yay, love PE', or the other group that goes, 'I'm not going outside, I could sweat'." - PE

KEY SURVEY FINDINGS

Seventy parents and teachers of primary school aged children participated in an online survey, which consisted of fourteen questions. The key findings from this survey can be seen in this section.

Exploring Children's Physical Activity in Primary School

This survey seeks to explore how classroom teachers, physical education teachers, and parents of primary school aged children view physical activity in relation to a primary school context.

Please note that this study has been approved by the QUT Human Research Ethics Committee (approval number 1800000355). The submission of the completed survey is accepted as an indication of your consent to participate in this research project. All answers are confidential and are only being collected for the purposes of this study.

Tell me how strongly you agree or disagree with the following statements:

Description (optional)

I believe that the current Australian curriculum incorporates physical activity effectively in primary schools

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

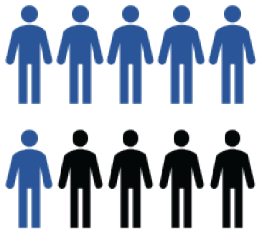
I believe that the curriculum impedes opportunities for children to be physically active

70

Parents and Teachers of Primary school aged children indicated that...

60%

Believe that the current Australian curriculm incorperates physical activity well



94.3%

Believe that screen-based sedentary activities impact a child's willingness to participate in physical activity

81.5%

Believe that children have appropriate access to equipment

40%

Indicate that technology is currently used in the classroom

87%

Indicate that students regularly participate in physical education classes

45.8%

Were concerned about physical activities taking time away from the academic curriculm

63.2%

Want to see children spending more time being physically activ as well access to more equipment

SUMMARY OF KEY FINDINGS

Participants identified key Approaches to children's physical activity, such as programs, activities, and events that are designed to promote and engage students. Encouragement and support was often used by educators to motivate students to participate. Many of these activities also incorporated a variety of equipment such as balls, skipping ropes, and playgrounds.

Inhibitors that were identified inluded restrictions imposed by the education system, whether that was the pressure of academic success or limited funding for physical activity equipment and resources. Mindsets and behaviours of teachers and students emphasise an increase in both screen-based and non screen-based sedentary activities. Shifting the mindsets and behaviours of educators and students towards using movement as a tool and viewing physical activity was an improvement identified by participants.

The reduced interest has resulted in children not developing appropriate fundamental motor skills, which is impacting on their academics. This is creating a bigger issue because children cannot achieve the requirements of the curriculum. An improvement suggested by interview participants was to modify the curriculum to improve its flexibility while dedicating more time to physical activity. Although, survey participants indicated that the curriculum was working well. In addition, survey participants indicated that they would be interested to see children spend more time being physically activie, but worry about how that could take away from the curriculm. There was general consensus that more equipment and resources would be of interest. With this, also came the potential for the idea of 'risk' to be redefined.

The interviews and survey results indicate participants have strong opinions in the area of children's physical activity. The opinions vary across the different types of participants. These points will be elaborated on in the next section of the report, individually discussing the results, and then bringing them together using triangulation to showcase similarities and differences in opinion.

06

DISCUSSION OF FINDINGS

INTERVIEWS

The findings from the interviews will be discussed in accordance to the themes of approaches, inhibitors & ramifications, and improvements as showcased in the table in the interview findings sections

APPROACHES

Providing Activities, Programs, and Events

1. ***Routine Physical Activities***
2. ***Programs and Events***

The participants explored a variety of different activities, programs and events scheduled within the curriculum that have been used to engage children in physical activities. Classroom teachers who work with younger students provide gross motor activities where children develop physical skills. Those who work with older students focus on whole class games, which use the skills developed in their earlier years at school. Dancing was another activity used to engage students. When the routine became more familiar, more students felt comfortable participating. As soon as the routine or environment was deemed unfamiliar or stressful by students, the levels of participation decreased.

> ***"We kind of ended up with about five or six dances that they just really liked, like as a class, they just quite liked. And what I found was, as long as I just kept doing those few over time more and more kids started doing it. Until after a couple of months, I probably only had one or two kids who maybe only would do it half the time". – Classroom Teacher Four***

Lunchtime play is a dedicated time for children to run around, play games, use the playground and burn off energy before coming to class. Children tend to run their own games during this time whether that is soccer or handball for example, but sometimes teachers try to provide opportunities for lunchtime games. This physical activity time can become a part of a child's routine, but because it is usually up to the children to create, some children tend to be more sedentary or not participate.

Guests have been asked to come out to schools to provide classes in yoga or engage children in fun physical activities. A yoga instructor came out to a school and provided scheduled lessons for a period of time to engage children in mind and body activities. Another example was groups that would come out to schools to promote physical activities in fun and innovative ways using interesting equipment and encouraging whole class participation.

> ***"There used to be 'Life be in it' groups that used to come in and do activities. They had a great big Earth ball and would roll it around and the kids got active that way". – Classroom Teacher One***

Athletics carnivals and cross country are events held annually at schools, which encourage training for and participation at the events. These events require students to participate in individuals and in teams, promoting competion and team work. These features are generally used to motivate students to enage in the physical activities on the day.

Alongside classroom teacher's physical activity initiatives, Physical Education and the Education Adjustment Program provide a dedicated time for students to be physically active. Physical Education teachers and school-based Physiotherapists provide mainly gross motor activities as a part of their programs, placing emphasis on the development of skills such as jumping, coordination, balance, motor planning and strength. When providing programs that target skill development, interviewees often have to demonstrate skills to children.

Physical Education is provided to every school, often proving a lesson each week to each class. This program is run by a Physical Education teacher. Certain schools have access to school-based physiotherapists who operated under the Education Adjustment Program. Their services are requested by teachers, to provide assistance to mainly students with disabilities, who are struggling with fundamental skills.

Physical activities have been incorporated alongside academic learning. This was a strategy to improve the time children spend being physically active explored by Watson et al. (2017). Classroom Teacher Four states that teachers have incorporated physical activity and gross motor into literacy rotations and geography lessons. The PE teacher indicated that they ask teachers what they are doing in their lessons and work on exercises to enhance their academics. The physiotherapist also stated they have developed a program to be used alongside book of the week, using videos of actions to motivate children to not be sedentary in class.

"I'll ask the teachers, you know, "what are you doing in maths"? Oh, they need to practice their counting in twos. So, when we are bouncing the ball, for example, we count in twos, and everyone bounces and counts, and we, you know, things like that." – Physical Education Teacher

"The teacher will generally identify the students that need support, and the teacher will say, you know, little Johnny can't jump, or Mary can't do climbing very well or something like that I'll develop a programme for the whole class, but I'll target those skills so that the student that I'm referred who is particularly struggling with and needs to know." – School-based

Brain Breaks or movement breaks have become highly popular with teachers and students. This program is similar to the Get Moving! and Transform US! examples discussed in the literature review. They are used during class time to settle students and prepare them for learning. The interviewees recognise, much like Howells et al. (2018) and Pawlowski et al. (2016), that schools and the education system should implement physical activity initiatives as children a large amount of time at school. This is especially evident in the early years as there is a clear focus on gross motor skill development. Every interview participant has experience with providing set times for physical education and work within the ideals of the curriculum to promote physical activity and engage children in the activities.

Positive Mindsets, Environment, and Communication

1. ***Self-esteem***
2. ***Encouragement***
3. ***Demonstrations***
4. ***Honesty***

The interviewees all indicated that they would demonstrate skills, either to improve them if they were weak, or so they could participate in various physical activities. This skill development worked to not only improve their fundamental skills, but also improve their confidence and self-esteem. Morgan & Hansesn (2008) discusses that teachers who are not confident in demonstrating skills or provide physical activities can inhibit the opportunities given to children.

"I guess my biggest thing is the self-esteem thing… I didn't like seeing situations where they didn't feel comfortable or… I didn't want to perpetuate the situation, which was going to see out how they were perceiving themselves before they started." – Teacher Two

Feedback, encouragement, patience, honesty, positivity, were all communication tools used by participants to ensure children developed positive mindsets. This developed an environment that felt safe, and led to an increase in student participation. Teamwork, fun and negotiation worked to strengthen this. Overall, for the activity to be successful at engaging students, they had to feel comfortable and confident with the environment of that physical activity. As stated by a couple of interviewees you have to be honest with students for this to work. If the task is challenging, acknowledge it will be difficult, but talk them through it, emphasise why it is important to do the activity, and encourage them to have a go.

"If it's going to be really challenging, that you actually acknowledge that it's really challenging. Because saying really upbeat and positive, and oh it's going to be fine and we can do this easily, only goes so far because if a kid really can't do something." - Teacher Four

Facilities, Equipment, and Technology

1. ***Playgrounds***
2. ***Sports or gross motor equipment***
3. ***Interactive whiteboards and iPads***

A variety of resources are necessary to facilitate physical activities. Playgrounds have been updated and new equipment provided to entice children to participate in physical activities. Obstacle equipment, balls, mini tramps, tennis rackets and tennis courts, multiple playgrounds, hula hoops, skipping ropes, etc., are often provided by schools for students to use. The Physical Education teacher states that they have placed equipment in classrooms to make sure it is easy for children and teachers to access. With interactive whiteboards being placed in classrooms, Teacher Four states that they have used videos and music played on this device to demonstrate dances. All participants indicate that it is important that they have the necessary equipment available to them to provide appropriate physical activities.

Schools enable children to have access to a variety of equipment that can be used to promote and engage them in physical activity. The typical playgrounds and equipment have been used to engage kids for years. With new technology such as interactive whiteboards and ipads being used for physical activity purposes, the abilities for educators to incorporate more physical activity in the classroom as well as lunchtime and physical education has increased. By using the idea presented by Bruno (2018), that the current learners tend to have a better technological understanding than their instructors, the physical education teacher has improved the confidence of their children before the start of the lesson. Gamification as explored by Zuckerman & Galoz (2014) has been used by teachers to encourage children to become more active.

INHIBITORS & RAMIFICATIONS

The Education System

1. ***Restrictions imposed by the curriculm***
2. ***Limited equipment and facilities***
3. ***Not enough programs***

There were several inhibitors discussed by interviewees, leading to a variety of long-term ramifications, which they are noticing within schools. The inhibitors identified are interconnected. The education system, accompanied by various mindsets and behaviours of individuals, has impacted the development of children's physical and social skills. This has led to children disengaging in physical activity in primary school.

The education system, as discussed by the interviewees, has changed, placing more emphasis on academia. This has reduced the time for physical education, and flexibility within the curriculum, resulting in more time being sedentary, a point reiterated by Greico et al. (2016). When Prep was introduced, children were no longer attending preschool, where play and gross motor skill development were an important part of a child's day. This has led to Physical Education having to provide appropriate skills to children as a part of the set curriculum, which is graded. But again, only a small amount of time, 30 - 60 minutes per week, is dedicated to physical education. As discussed by the Physical Education teacher, the curriculum keeps trying to 'reinvent the wheel' by implementing new systems around physical activity. This has resulted in teachers, especially those teaching younger grades, if willing, have to schedule time amongst other academic requirements for gross motor or movement activities such as brain breaks.

The Education System also provides funding for schools to upgrade facilities, purchase equipment, and provide appropriate human resources. If the school does not provide appropriate resources to staff and students, children's participation in physical activity could be impacted. The systems around equipment such as storage or students' access, technology provided to staff for teaching purposes, and playground usability, as well as systems around physical education and school-based physiotherapists have led to issues with communication, adaptability, and interest.

> ***"Lack of the equipment that kids love, like playgrounds, swings or flying foxes, or like the big spider nets, like climbing things and those sorts of things, we don't have them in, in our schools... I think as far as the equipment goes; I wouldn't even be able to tell you how old the playgrounds are at our school, but they're not new. So, I think part of it too sometimes is when a playground looks tired, and the paint is chipping off it and, or it's hot in the sun, and it's hot to touch or anything like that, it's not enticing to the kids, like it just doesn't look interesting". - Teacher Four***

Mindsets and Behaviours

1. ***Patience, persistance, resilience, & self-esteem***
2. ***Teachers pushing back new ideas***
3. ***New and unfamilar activities***
4. ***Taking away physical activity as punishment***
5. ***Risks and safety concerns***

The Education System, as well as different interests and perspectives, have resulted in the development of a variety of individual mindsets and behaviours that hold negative feelings towards Physical Education, as reiterated by Morgan & Hansen (2008). Due to the pressure put on classroom teachers by the academic curriculum, physical activity is often seen as less important during class time, as physical education and lunchtime play can supplement this activity. This has transferred pressure onto Physical Education teachers, as well as school-based physiotherapists, to develop programs to improve children skills and physical abilities. As stated by Howells (2018), dedicated Physical Education lessons are deemed the most suitable vehicle to engage children in physical activity. But this was identified as not being the case, because those providing dedicated programs do not have the time, or the support of teachers, to implement the needed physical activity.

> ***"Uptake from teachers, they're still not convinced because it's still taking time away. Even though you might get, you know, an hour's worth of work done in 45 minutes because they've done 15 minutes of movement, they will see that as early having done 45 minutes". - School-based Physiotherapist***

As stated by interviewees, children are not participating in 60 minutes of physical activity per day as suggested by the World Health Organisation. Because children are spending too much time being sedentary, schools are now having to incorporate more physical activity back into their curriculum. The academic pressures are making it harder for teachers to increase the amount of physical activity or even shift their mindset that physical activity is just as important as academic work. Therefore, the staff dedicated to engaging children in physical activity, as well as teachers who have new ideas, are having to convince teachers to incorporate physical activity more because children's grades are dropping due to their lack of physical skills and ability to concentrate in class. This all comes back to the fact that children are not spending enough time being physically active.

The lack of time children are spending being active outside of school, either by playing outside, participating in team sport, or practicing skills with their parents or at kindergarten, has been identified as a huge problem by multiple interviewees. The lack of perceived time and the shifted interest of children participating in screen-based sedentary activities were stated as the main contributors to this problem. Because children are not developing their skills or participating in physical activity as often, there has been an increase in negative mindsets or a lack of interest in physical activities.

This has also affected skills such as resilience and persistence, often needing instant gratification and success on the first go or they do not want to participate. This has also required teachers to be patient with students when teaching new skills, as well as them encouraging students who have the skills to be patient and supportive of students who are struggling. Which does create a positive and supportive environment but can also lead to ostracization when partnering up or picking teams for games.

"When you are introducing new activity, the kids are less likely to persist with it, and they give up really easily and they get sick of it and I say it's boring and all of that." – Teacher Four

"Most often the kids that are not very sporty, or have low coordination, or haven't got the skills that they need, will often tend to be on the outskirts of the game and not actually fully participate." - Teacher One

Physical activities have become more connected with safety concerns. Due to potential negative ramifications of injuries, resulting in children unable to participate in schoolwork. Because of incident reports and scrutiny, teachers have steered away from encouraging safe risks, or even providing opportunities for physical activities. But this can also impact a child's ability to problem solve and navigate, as they are often told something is dangerous and they are not supposed to do it without an explanation first.

"I think that's another thing why teachers are very hesitant about gross motor skills, because there's a higher risk, and therefore, greater chance of the kids going to get hurt. You sort have almost got to wrap the kids in cotton wool."
- Teacher One

It was indicated by a classroom teacher that if children misbehave in the classroom, their physical play time is taken away during their lunch time. They made a good point that these children are often misbehaving because they need to be active, and are getting in trouble for being out of their seat. These are the children who need more physical activity, but the dedicated time for it during their school day is being reduced. Many teachers disagree with this idea, but it is a difficult mindset to change.

"Often, the kids who missed their play time, are the kids who need the play the most. So, it becomes a really difficult cycle to break out of, I think." - Teacher Four

Skill Development

1. ***Limited skills developed before starting school***
2. ***Parent's aren't going outside with their children***
3. ***Not attending Kindergarten***
4. ***Not practicing skills***

Children are coming to school with limited gross motor skills. The lack of play in a child's early years has led to children not exploring their physical capabilities and developing necessary movement skills.

"We require students who have done a lot of that play-based stuff in the younger years, and I think that's kind of ignored… if they're not getting that play and exploration and experimenting with their bodies, finding what their physical limits are, understanding how they move and how to move in their environment, they're not going to be able to like hone those skills to then just sit still."

– School-based Physiotherapist

Because children are spending more time being sedentary and their parents don't have enough time to spend outside with them, this is also resulting in children not actively developing skills because they aren't encouraged to go out and play or kick a ball. If a child has gross motor deficits they often lead to problems with fine motor skills. It is known that this is a widespread problem, stated by O'brien et al. (2008) and Gonsalves et al. (2015) as they acknowledge children with Developmental Coordination Disorder, or at risk of developing it, come to school with a variety of poorly developed fundamental motor skills. These are leading to issues with both physical activity participation and academic success.

"Children need gross motor before the fine motor - And they talk too about the fact you need to have the gross motor before you can do the fine motor. So, when we are seeing that kids have got huge fine motor deficits, we're also seeing that they have gross motor deficits which is contributing to fine minor issues that they've got." - Teacher Four

This is putting added pressure on classroom teachers, PE teachers, and school-based physiotherapists to develop children's skills up to a level where they can achieve their best when moving through the academic curriculum. Multiple interviewees stated that the skills of current students do not match the demands of the current curriculum. The play that should occur before school, the gross motor and fine motor skill development, social skills, and emotional resilience are not adequate, often resulting in interviewees having to battle the lack of skills to achieve the requirements of the curriculum.

"It becomes like a battle because the teachers then need them to write and they need them to be doing this, so they're showing them pencil grips but, and I know where talking mostly about gross motion but this just as an example. You know, grip is quite developmental. you've got Parma grasp and then you hold the end of the pencil and finally get to the tripod, sort of thing. But teachers and parents are trying to get the kids to do the grip, but they haven't done all of the skills are the strength things before. And it's the same with gross motion, like how are you going to get core strength when you've, you know, you lay on the floor to play your games or you slump back in the chair". - Teacher Three

The Physical Education teacher even pointed out that not every child has access to equipment at home to develop these skills. They stated that in a class of 24 students only 4 had a ball at home. This lack of equipment at home has resulted in children not being able to do simple physical activities such as hula hoop or skipping. Which can be frustrating for teachers and students.

"They don't know how to put a hula hoop around the waist and have a go at it. Now, I thought that was just a natural thing. I had to do a lesson with hula hoops to show them how to use them, and different things we could use them for. I was amazed how many kids couldn't use a hula hoop. It was incredible".

- Physical Education Teacher

Children when frustrated often don't know how to communicate appropriately, emphasising the physical, social, and cognitive behavioural benefits of physical activity identified by Morgan & Hansen (2008). If students don't participate in team sports, they aren't given the opportunities to fail at something, or people don't teach them important social skills often acquired through participating in physical activities. Therefore, children are now having social and emotional issues because they haven't developed the protocols involved with taking turns, winning and losing, or communicating effectively if they want to use something someone else has.

IMPROVEMENTS

The Education System

1. *Changes to structure*
2. *Physical activity supporting academics*
3. *Increasing funding dedicated to physical activity*

The education system provides the foundation for improvements to physical activities. The participants have to work around the system to incorporate their ideas to improve children's engagement to physical activity. Participants often stated that they want to overhaul the whole system so it could be designed better to suit the children, not only for physical activity, but also academics. As this is a huge undertaking, the specific structural changes that they would like to see will be discussed, which often leads onto other improvements that were suggested.

The structure of the education system currently favours academic lessons over physical activity. Therefore, teachers are suggesting that more time should be dedicated within the curriculum for children to be physically active. This is consistent with Grieco et al. (2016), as they discuss standardized testing taking priority. Everyone stated in one way or another that they want more time and opportunities to implement their ideas for incorporating more physical activity, both in the classroom or during lunch time. Allowing for the ability to negotiate the activity with children or choose an activity to specifically develop the needs of children were commonly discussed.

"There's real magic to having the time to negotiate stuff with the learners, and you know, and to go where they need at that particular time." - Teacher Two

Generally, participants wanted to shift the system towards acknowledging the importance of physical activity and using that to enhance the system. Many also stated that they wanted teachers to be able to interact with the children during lunch time whether that is to set up activities, teach social and physical skills, or just provide encouragement to children to participate.

Participants reiterated their interest in approaches that combine academic learning and physical activities, and wanted to see this incorporated more. This would require the system and teachers to again recognise that academic learning doesn't have to be sedentary and that combining physical activity with academic learning does not take away from the experience, instead it adds to it.

These programs and activities would need funding to develop these ideas and ensure they are effective. Government funding would be used for improving or providing more equipment, increasing access to human resources. This could include providing more physical education teachers for large schools and more time scheduled for these activities. Programs run by school-based physiotherapists could also be easier to access. Improving school facilities and equipment is vital to ensure every student, especially those with disabilities, has access to areas of the school so they can participate in physical activities and engage with other students.

Programs, Activities, and Equipment

1. ***Availability of equipment and facilties***
2. ***Access to human resources and programs***
3. ***Fun***
4. ***Safety***

Programs, activities, and equipment feed directly into the improvements suggestions for the education system. The availability of equipment, facilities, human resources and programs is directly impacted by the funding allocated to schools. The right equipment and appropriate facilities are needed by the interviewees so they can develop their activities to suit their students.

The interviewees indicated that students also need to have access to equipment to suit their interests and needs. This could mean having the equipment available to them at school, but also at home. This is important so that students can develop their gross motor skills before coming to school and can practice the skills they learn at school.

"I'd like to see students be able to access equipment. Every child has a ball, has time where whatever they can do at school... and that's the other thing I'd like to see that I was able to see the children more times."

- Physical Education Teacher

Human resources are also needed to improve the system surrounding physical activity. Whether that is more physical education teachers within a school to teach different year levels, teachers aids to provide extra assistance to students struggling with physical activity, or expanding the Education Adjustment Programs' reach to ensure every student has the appropriate gross motor skills. Again, the availability of human resources, equipment, and facilities requires adequate funding and shifts in the structure of the education system.

The safety of equipment is a general concern identified by the interviewees. They express that often the equipment, especially if it is old or seemingly dangerous, is something that should be improved upon. The suggestions were to have equipment that could be modified or adjusted to suit the children using it to reduce the risk of injury.

"And I know it's probably just a pie in the sky thing, but I think it'd be great if you could lower it down and raise up, you know, the monkey bars, or do a way that they can't get hurt, because the effects of that is pretty, pretty difficult, particularly if they've got a broken arm and they can't write, they can't shower properly… so making equipment safer would be really good." - Teacher One

The idea that there is a need to reduce the risk to students has led to equipment needing to be safer, but has also affected children's abilities to explore and problem solve. Therefore, it is important that the equipment is safe to use, but also is interesting and can allow for children to explore and think about how they interact with the equipment. But to make sure equipment is safe to use, teachers need to know how students should be using it, the equipment needs to make sense.

Overall the equipment and activities need to have an element of fun, or children get bored and don't want to participate. If equipment is old, broken, or uninviting then children won't use it. Therefore, it is important the children be excited by equipment and facilities so they are more likely to choose to play or be physically active over being sedentary.

"I think part of it too sometimes is when a playground looks tired, and the paint is chipping off it and, or it's hot in the sun, and it's hot to touch or anything like that, it's not enticing to the kids, like it just doesn't look interesting." - Teacher Four

Communication

1. ***Campaigns and promotion***
2. ***Encouragement and support***
3. ***Leaders and instructors***

Encouragement and support are common approaches to engaging children in physical activities, but interviewees would like to see this improved upon. They suggest not only encouraging children to participate using positive affirmations and demonstrations, but also encouraging teachers and parents to incorporate more physical activity opportunities into the routines of their children. This communication is vital to make sure that everyone feels supported and confident in providing more physical activities. The school-based physiotherapist is communicating with teachers to set up a classroom-based physical activity program so that teachers feel confident to incorporate more physical activity in the classroom.

"The OT and I used the pandemic as a platform to promote the benefits as they can do the leg work and get the teachers to engage students in movement within the curriculum and show that it works." - School-based Physiotherapist

The physical education teacher writes in the school newsletter about the activities provided to children in the different year levels. This promotes the program and encourages parents to go outside and be physically active with their children, helping them practice the skills learned in their school activities.

A classroom teacher suggested that more campaigns be implemented into schools to widely promote physical activity. This would also engage children across different schools, or provide an opportunity for fun competitions to increase participation. These methods of communication need leaders to convince people that physical activity programs should be pursued more in schools because they are vital to children's development. These leaders would also ensure children, teachers, and parents that it is safe to try new things and develop new activities that would improve a child's ability and willingness to participate in physical activity.

"More probably campaigns, you know, like, even if it was like inter school competitions, but not even kids going to different schools but you know it might be, how many hours of skipping could you do or, you know, they could they could do it at lunchtime so they have like a little competition like setting up like a target, and kids throwing at it, or you know what I mean, yeah, like some sort of little mini, mini things that would encourage kids to get active and fit and do more of that skill work." - Teacher One

Mindsets and Behaviours

1. ***Creating postive mindsets***
2. ***Redefining risk***

The previous improvements would all work to improve the mindsets and behaviours of children, teachers, and parents. Before any improvements can be made, the individuals within the system need to be open minded in order to move towards a positive outcome. The idea that "school was a vehicle to feel good about yourself", as stated by Teacher Two, reinforces that education should be about the children and making sure they are getting a great start in life in both academic learning and physical skill development. Many participants feel as though this is being lost, especially under the immense curriculum pressures focussing on academic success. This means that individuals need to be more open minded to new ideas so teachers can trial research indicating that physical activity can improve academics, or programs they think could be interesting, without other people shutting their ideas down or pushing back against progress.

As stated previously, the idea of risk taking should be improved upon, not only so students can take risks to build resilience and develop various skills, but so teachers can take risks with their lessons. This relates back to the open-mindedness issue, if people can't take appropriate risks, new ideas for improving the system, teaching styles, and the activities and programs cannot develop.

"Redefining the understanding and opportunities associated with risk because it can build resilience and they try different things – teach them it's ok to do these things, but be safe about it." - Teacher Four

THE SURVEY

The survey was used to explore the findings from the interviews. Parents and teachers were asked to provide their own understanding of how their children engage in physical activity during primary school. The data collected from the surveys can be seen in the appendix.

The Curriculum

The survey results indicate a majority of participants believe that the approach of the current Australian curriculum effectively incorporates physical activity in primary schools, with 22.9% strongly agreeing and 37.1% agreeing. These statistics go against the information the interview participants who are classroom teachers, physical education teachers, and school-based physiotherapists have provided, as they strongly indicate this is not the case. This also contradicts the findings of Daly el al. (2017), Johnstone et al (2018), and King-Dowling et al. (2015), as they indicate that there is evidence of an increase in childhood obesity, a decrease in self-confidence, and a decline in physical capabilities. This connotes the idea that survey participants, who are mainly parents, think “all is good”. There is a disconnect between the reality and the perspective of parents who do not show concern that their children are being impacted by the curriculum and the lack of time they are spending being physically active.

There was a slight shift in thoughts when considering whether the curriculum impedes opportunities for children to be physically active, with just over half either neutral or in agreement with the statement. This also contradicts the interview participants as they have indicated that the focus of the curriculum is academic, often putting a lot of pressure on teachers and students to achieve success in this area. In light of this, 60% of participants indicated that children should have access to more physical activity in school. This is contradictory because the responses indicate this idea that the curriculum is “fine” and “working well” but participants still dont think it is good enough.

Therefore, the survey participants recognise that children should be participating more in physical activity at school, but do not believe that the curriculum is directly responsible. As stated by interviewees and confirmed by Grieco et al. (2016), the pressure of the academic portion of curriculum is taking time away from the opportunities for more physical activities. This adds even more pressure to an already overcrowded curriculum as educators are suggested now to squeeze more into their days. Maybe opportunities for physical activity alone are not the solution, as discussed by interviewees, programs should be designed to incorporate more physical activity by introducing more integrated learning using the book of the week idea, gross motor for reading groups, walking in geography lessons, bouncing a ball for counting practice, and monkey bars for patterning.

Sedentary Behaviour

94.3% of participants were in agreement that screen-based sedentary activities were impacting a child's willingness to participate in physical activities. 71.4% of participants were in agreement that screen-based sedentary activities can also have an impact on a child's ability to participate in physical activities. This figure is indicative of the statistics presented by Grieco (2016), that children spend 92% of the 30hrs a week at school being sedentary. Yet, the participants of the survey do not agree that there is a direct correlation between sedentary behaviour and the curriculum, instead they determine it is due to children's interests in technology.

Screen-based sedentary behaviours were an issue brought up by several interview participants, as they have seen children more focussed on playing video games and watching television than going outside and playing, particularly at home, leading to a lack of skills when coming to school or reducing the time to practice and develop skills learnt during school. But this was only part of the problem they found. The other part was that children were not being encouraged to participate in physical activity at home, getting outside and playing with their parents, participating in team sport, etc. This ultimately leads to children not having the skills needed to play sport at lunch time or having resilience or persistence to learn new skills. As stated by the school-based physiotherapist, "it's a whole chain of events".

Equipment

A child's access to equipment to support physical activities was believed to be appropriate by 81.5% of participants. This leaves almost 20% of participants who believe the ability for their children to access this equipment could be better. A child's access to equipment to support physical activities was believed to be appropriate by 81.5% of participants. When compared to the interviews, equipment access was considered a concern, especially for those who work at schools where they do not receive enough funding or have the facilities necessary. Therefore, there is a contrast between the ideas of interviewees and those who completed the survey.

Technology

40% of participants indicated that technology is currently used in the classroom to support physical activity, 28.6% stated that technology is not used, and 31.4% didn't know. 52.9% of participants indicated that they would like to see technology used more in the classroom to promote physical activity. 24.3% had a neutral opinion on this. When comparing this to the interviews, this result is similar, some interviews embraced technology such as interactive whiteboards, PowerPoints and music, to engage children in fitness and establish a learned routine that worked to improve their confidence, resulting in higher rates of participation. Others indicated that they wanted to keep physical activity more 'old school' and teach children using their own demonstrations or sports equipment to be practiced in dedicated areas.

As the different types of activities that used technology were only briefly discussed by interviewees, the participants were asked to disclose, if they use technology, the different types of programs or activities that are accompanied by it. There were a variety of programs mentioned, majority using interactive whiteboards. Go Noodle, Mooviee, yoga, just dance, YouTube clips, games, songs, and guided videos were often run through interactive whiteboards as a part of the Brain Break program. iPads have also been used in the classroom. These devices were also discussed in the interviews, iPads were also indicated to be used by the PE teacher to be used for moderation purposes.

The idea of gamification and the use of technology was addressed multiple times in the literature review by the Gonski Institute for Education (2020), Grieco et al. (2016), and Zuckerman & Gal-oz (2014). The interviews and survey demonstrate that educators are using physical activity programs and games supported by technology to encourage students to participate. This has worked, but as discussed by a classroom teacher, these games supported by technology only have their full effect when accompanied by a routine or familiarity. This not only was the case when using technology but when trying to introduce more physical activities in general. Therefore, educators have to work hard to promote and encourage children to participate in physical activity due to predetermined negative mindsets and lack of confidence, stemming back to a lack of fundamental motor skills.

Types of Physical Activities

The different types of activities children engage in were explored to determine those that are regularly participated in, the most popular, and the least popular. The activities explored were indicated by interviewees as methods they use or have seen children participate in at school.

When asked what types of physical activities children regularly participate in, 87% of participants indicated Physical Education. This was also determined by the interviewees. Lunchtime sport, Games, classroom-based activities and gross motor activities were also highly ranked. Afternoon sport, dancing, and guest instructors were indicated as less regular, but still were recognised as common activities by a large number of participants.

School yard games (81.2%) and playground activities (79.7%), were indicated as the most popular activities with children during school time. Physical education was indicated as popular by 66.7% of participants. Organised lunchtime sport (52.2%), classroom-based physical active games (50.7%), Interschool Sport (42%), and classroom-based physical exercises (37.7%), were also indicated as popular with children. The activities indicated as most popular correlate with those discussed by interviewees. This could help school staff to provide these activities more, increasing the opportunities for children to be physically active both inside the classroom and during lunchtime.

Cross country running and holistic fitness were both indicated as the least popular with children as indicated by 49.2% of people. Cross country running was indicated by interviewees as a physical activity that children avoided, which correlates with the survey data. Although, interviewees indicated that children enjoyed yoga when provided by a guest instructor, and also stated that they would like to see more activities with a similar approach to improve mind and body coordination and used to relax children. Dancing (37.7%) and skipping (36.15%) were also indicated as not being popular with children, this is also contradictory to the experience of interviewees.

The top ten reasons why children find physical activity to be fun are presented by Hopple (2018). The findings from their research is presented below in the order from most to least important:

1. Being Skilled and Competent
2. Being Active With Family Members
3. Learning New Skills + Knowledge = Fun
4. Feelings Experienced During Movement
5. Competition and Winning
6. Physical Activity Relieves Stress
7. Being challenged (But Not Too Much)
8. Positive Interactions with teachers and coaches
9. Being ‘Mindful in the Moment’
10. Being Physically Active

These findings reveal that the most important factor that influenced whether their children saw an activity was fun was that of being skilled. Participants indicated that the activities children most enjoyed were using the playground and playing school yard games. As the types of activities within these areas are chosen by the children doing them, they often only participate in activities that they feel comfortable doing, relating more to the reasons of lesser importance.

The activities that are provided regularly, such as Physical Education, is designed to address all of these areas of fun. The Physical Education teacher even encourages children to go outside with their parents and engage in physical activity. This activity is still rated highly with children according to survey participants, but activities that are deemed more overtly fun are ranked higher. Even lunchtime sport, which also exhibits similar elements of fun to Physical Education lessons, is regularly participated in.

The activities deemed least popular are Cross Country running and Holistic Fitness, these do require significant physical abilities, but they are more individual. The activities that were deemed popular encourage interaction. This has been shown by Hopple (2018) and the interviewees, that when children are receiving encouragement and working as a group, they are more likely to participate.

Every option given in the survey requires children to have developed fundamental motor skills. But, it is important to note that the activities that children regularly participate in do require advanced levels of skills. The activities indicated that children find more popular are those that put less pressure on kids to have fundamental skills, and those that aren't popular do not encourage children to interact or are deemed "boring".

Concerns

The concerns of participants were also explored, 45.8% indicating that the time taken away from the curriculum was their biggest concern. This is indicated not only by the survey but by interview participants. Changes are not being made because the academic elements are being deemed more important. This shows that there is a lack of understanding or information provided to parents in particular, that children should be doing more physical activity. Especially due to the impact outlined in the Literature Review and Interviewees.

The child's confidence regarding their physical skills were the second biggest concern (27.1%). These concerns were also strongly expressed by the interviewees. Again, the only way children can become more confident in their skills, as discussed, is that children participate in more physical activity. If children are not going outside and playing, practicing skills, being active with their parents or family members as reinforced by Hopple (2018), then children are not going to have the confidence in their skills that they need to engage well. The role of parents and teachers in encouraging children to participate more and actively engage should not be underestimated (Hopple, 2018).

The indoor/outdoor space (18.6%), ehaviour concerns (16.9%), risk of injuries (11.9%), and confidence with regards to the participants ability to engage children (11.9%), were also indicated as worries participants had. This reiterates that individuals' perceptions and their roles significantly impact why children are not participating more as the idea of confidence, behaviour, and risk far outweighed the facilities and equipment available to educators and students in schools.

To create change and work towards improving these concerns, it is important that individuals recognise the issues and move away from the “all is good” mentality and negative mindsets.

Opportunties

With everything that has been said, more dedicated time (63.2%) and more equipment (63.2%), were determined to be the improvements that the most people were interested in according to the survey results. More time can only be provided if the curriculum changes, because as stated numerous times by interviewees, there is not enough flexibility in the curriculum to create more time. Therefore, proving that the curriculum does not work well to incorporate physical activity, and does in fact impede opportunities for children to be physically active. This also indicates that the equipment available is easy to access but schools still need more. But, if schools just provide more equipment or upgrade facilities, this doesn’t mean that children will use it. Again, this comes back to altering the curriculum or encouraging more opportunities within the curriculum to combine academics with physical activity.

In support of the above, Government funding was also of high interest at 60.3%, this will more likely support the purchase of more equipment, but could also allow access to human resources. Classroom based physical activities saw 48.5% show interest, which supports the point made above that inherently the curriculum does prove a problem, and needs to be adjusted to allow teachers to integrate more physical activity in these areas. These results, along with those provided by interviewees have provided a foundation for opportunities that could be explored to improve how children engage in physical activity in primary school.

OVERALL RESULTS

The overall findings from the interview and the survey are addressed in this section. These findings will be used to develop the opportunities explored in the following sections:

Adjusting the Education System

On the surface, interviewees and survey participants were at odds with the role of the curriculum. There is a discrepancy between the views of classroom teachers, physical education teachers, and school-based physiotherapists who see first hand the lack of fundamental skill development that not only impact their physical abilities but their academic abilities. There is a disconnect between the interviewees who view physical activity as important and the views of parents and the education system who push for academic success.

This idea gets unravelled when analysing the results because more time and more equipment were seen as the main opportunities for improvement. This contradicts the idea that the curriculum is sufficient and children have appropriate access to equipment. Therefore, this contradiction needs to be made evident to parents especially. There is potential for the curriculum to have a shift in focus or see physical activity integrated more. Evidently all participants agree that this needs to happen.

Developing Routines

An important point made by interviewees was that students felt more comfortable in participating in physical activity if it was a part of their routine. Again, this relates back to the curriculum and the pressure on teachers to focus on academics. If children do not have a balanced routine, incorporating both physical activity and sedentary time spent doing academic work, children tend to not engage and struggle overall. Therefore, Brain Breaks, as suggested by interviewees, multiple times a day, such as before starting school and after lunch, could be implemented more. The Physical Education teacher suggested incorporating more dedicated physical education lessons as 30-60 minutes a week is not enough, which is supported by the literature and discussed by interviewees.

This routine and scheduled physical activity needs to be given a greater focus within the curriculum. This is evident. Teachers want to incorporate it more in the classroom, physical education teachers want to work with children more to focus on fundamental motor skills development, and school-based physiotherapists are pushing for teachers and the curriculum to shift focus as it is clearly not working well. Therefore, as explained by interviewees, physical activities, when part of a routine and combined with academic activities, leads to not only an increase in children participating but also children achieving a higher rate of success in their academic performance.

Reducing Sedentary Activities

The survey and interview participants both agreed that screen-based sedentary activities, such as playing video games and watching television, are taking time away from physical activity. The survey participants emphasise that this is a key problem affecting both a child's willingness and abilities to participate in physical activity. It is true that children are spending more time being sedentary using technology, but as the curriculum has shifted towards a focus on academic activities that are sedentary, this is also causing children to participate less in physical activities at school.

There is a discrepancy between the views of parents and teachers. Parents appear to be placing the blame on children's interests in technlogy, as they have shifted from playing outside to playing video games. Whereas, interviewees indicated that while this is the case to some extent, it is important that they are given time to provide more opportunties for physical activiy. Interviewees also state that it is important that parents outside of school, take the time to engage in physical activity with their children, promote team sport, and encourage children to be active at school. School teachers should also try to implement physical activities and encourage children to participate. They could develop activities in their classrooms that can improve skills and get kids up and moving, which has proven to be vital in early childhood development. For this to happen, the curriculum structure and mindsets of individuals have to shift away from the idea that academic lessons are necessarily sedentary.

Improving Equipment and Facilties

The survey participants and interviewees indicate that they want more equipment. There is a discrepancy though because the survey participants believe that children have appropriate access to equipment, yet only some interviewees indicate this. Many interviewees are concerned about the equipment and facilities that their school provides. The equipment and facilities that are popular with children can be related to the activities that were indicated to be the most popular. Yet, teachers have suggested that funding is prioritised to safety over enjoyment, seeing high jump mats bought over more “fun” equipment even though athletics is not determined to be highly popular with students.

Incorporating Technology

Interviewees and survey participants demonstrated similar perspectives on technology being integrated into the education system for physical activity. But many survey participants did not know whether this was already being incorporated, especially in the classroom. Interactive Whiteboards and iPads are being used by educators, many stating a variety of classroom based physical activities they currently provide. As there was an interest in technology being incorporated more, this could be explored further.

Considering the behaviours of children reveals their interest in technology, video games, and television, this could be used to shift them away from being sedentary whilst encouraging more physically active behaviours. This is currently being used in classrooms, but it could be integrated in better detail, especially with the development of Virtual Reality technology. This technology could promote interaction, exploration, provide feedback on skills, instruct users, and so forth.

Understanding Children’s Interests

The interests of children can provide a direction for improvement, but developing physical skills should be the main priority. Therefore, working to improve physical education lessons, incorporating more games or classroom based activities, as well as time spent developing fundamental motor skills should be the focus forwards. This is because, even though playgrounds and school yard games are deemed more “fun”, these activities may not adequately develop fundamental motor skills. Fun is important, but should not be the sole focus. Routine, skill development, and children’s confidence are also factors that should be considered alongside fun. Consequently, better activities could created by addressing such factors in a way that also makes them more appealing to children.

Funding

Whilst funding is needed to accomplish some improvements to the system such as buying new equipment, upgrading facilities, and hiring more staff, it does not impact the ability for the mindsets of individuals to change. If educators who strongly believe in the importance of physical activity have a platform where they can be heard and reach more people, then their message will be more powerful than having more money. As mentioned, if playgrounds or equipment is upgraded, that does not mean that children will use it. Yes, equipment such as a ball is needed so children can develop skills like throwing, catching, and kicking, for example, but unless the importance of these skills are emphasised, these skills won’t continue to be developed.

07

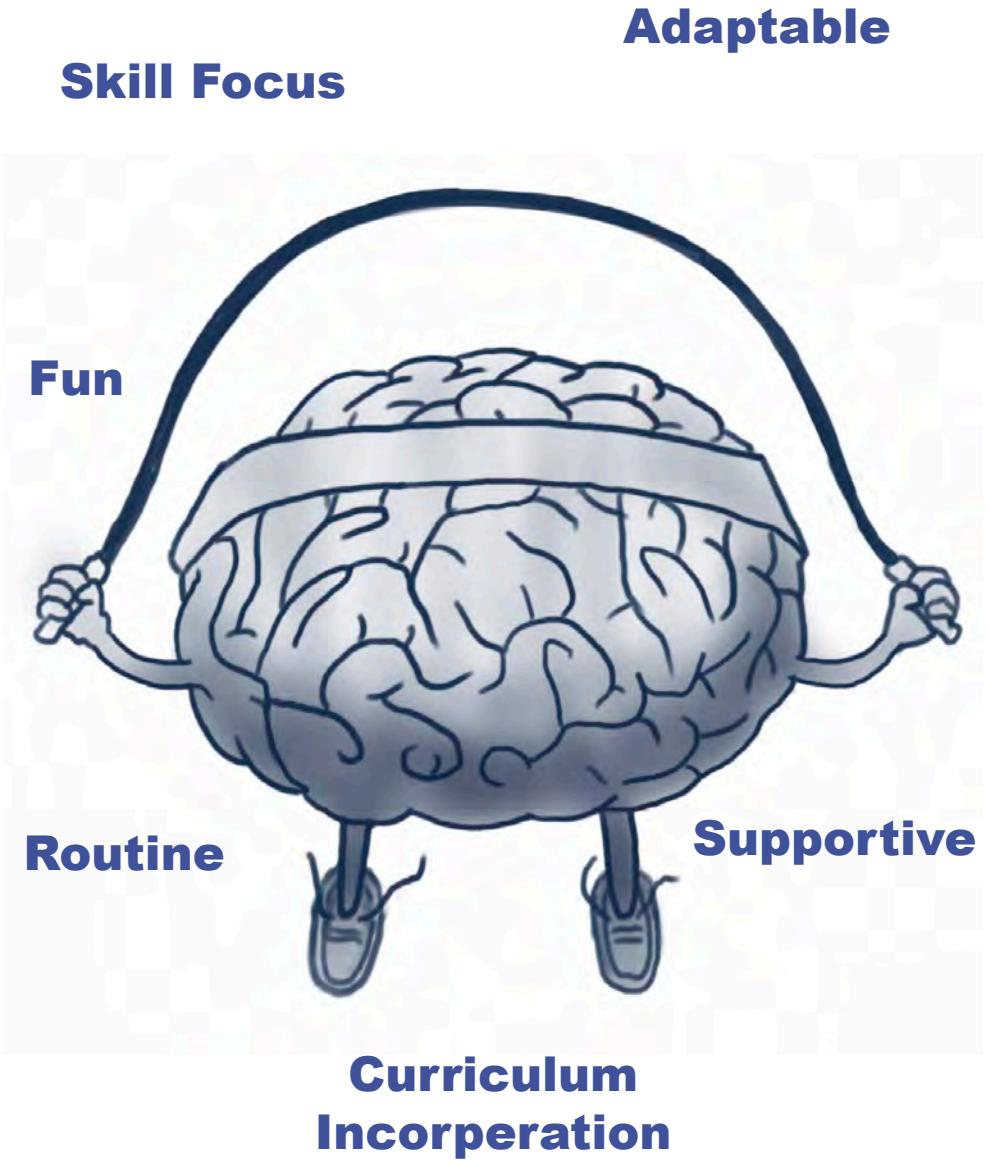
OPPORTUNTIES

IMPROVING MOVEMENT PROGRAMS BY INCREASING OPPORTUNITIES FOR MOVEMENT TO ACCOMPANY ACADEMIC ACTIVITIES

The popularity of the Brain Break program implemented by state departments for education is evident. These movement based programs are designed to break up the day and increase the opportunities for children to be physically active. As explored above, when physical activities were incorporated into academic learning, students achieved higher levels of academic success. The 'Go Noodle' brain break for example provides educators with a resource to short video and interactive games that span 3-5 minutes (South Australia Department for Education, 2020).

There are many programs that provide opportunities for movement breaks, but there is an opportunity for more to be done in this space. These active brain breaks are promoted by several education departments across Australia but it is up to teachers to implement these programs. Often teachers, due to curriculum pressures, spend more time on the academic side and tend to not include as many of these programs. Therefore, new Brain Break programs could be developed within the curriculum

For these programs to develop and become well established in the curriculum, they need the commitment of educators. They need to both implement these activities and work with their class to improve upon these programs. As mentioned it needs to be supported by a routine and be fun so children also feel more confident and enjoy participating in them. If it is supporting academic work, the movement should not take away from the activity, but enhance their thinking and learning experience.



DEVELOPING CAMPAIGNS, PROMOTING PHYSICAL ACTIVITY, AND COLLABORATING IDEAS

There is a need for improved communication to encourage educators and parents to provide more opportunities for children to be physically active. Campaigns, promotional events, newsletters, and staff development days could be implemented. These will allow for a broader discussion around the benefits of physical activity. Not only will this convince parents and teachers that it is important, it could see a shift in children dedicating more time to physical activity and establishing a routine.

Report cards and parent teacher interviews are often the only way teachers provide parents with feedback on their child's progress. These often have a strong academic focus. There may be un-utilised methods for teachers to communicate to parents the importance of physical activity. Explanations of why more time should be directed towards physical activity could be delivered to parents. This could send the message that to improve academically, more physical activity is needed. Therefore, evidence-based resources need to be provided to parents, as well as teachers, so they can incorporate more opportunities for physical activity and shift their ideas of what is important.

For this opportunity to come into full effect, the mindsets of individuals have to shift. This could prove difficult. There is clearly a lot of evidence, but it has not yet convinced people. This could change with better methods of communicating the evidence, or with stronger resources that incorporate the evidence.

EXPLORING THE DEVELOPMENT OF NEW TYPES OF EQUIPMENT AND FACILITIES

A variety of equipment opportunities are uncovered from the research. An option is classroom based equipment for movement breaks or for use alongside academic lessons. This could enhance the ability for teachers to instruct or encourage children to participate in these activities.

Another option is to develop outdoors based equipment. For example, playground equipment that could be adjustable, equipment for games, or obstacle course equipment. Often schools already have similar equipment, especially those used outdoors, therefore designs within this space would most likely be improved upon.

The equipment could also have a technology focus, using game features such as flashing lights and sounds to entice students. It could also take a Virtual Reality approach, allowing students to get a new perspective of physical activity. This could be especially useful to children who like playing video games as this equipment could combine the features presented by electronics and combine it within physical activity.

These devices could also be used to provide feedback, encouragement, instruction, and support. This could take the burden off teachers to demonstrate activities. It could also work to improve students' skills, particularly when doing gross motor activities.

Inside classrooms

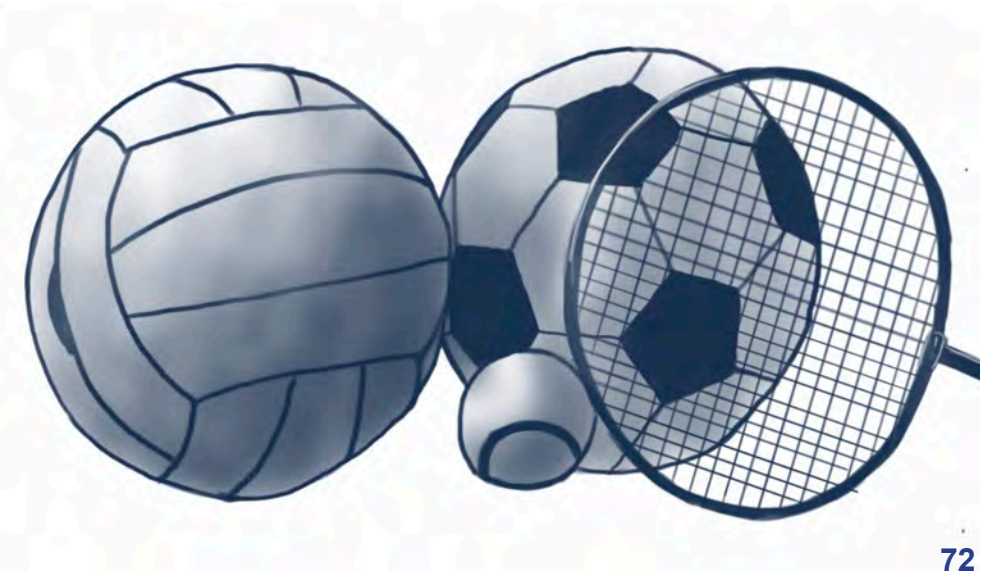
Outdoors in the playground

Specialist Equipment

Technology Focussed

Adaptable & Versatile

Encouragement & Feedback



08

DESIGN PROPOSAL

INTRODUCTION

The findings explored in the discussion demonstrate a need for more opportunities for physical activity to be provided to primary school students. Due to the pressures of the curriculum, teachers and parents tend to be concerned more about the academic achievements of children. This has caused children to be more sedentary at school because not enough time is dedicated to physical activities. It also results in children not having appropriate fundamental motors skills, which is also impacting on their fine motor abilities. This is causing problems, not only with children's physical abilities, but with their academic performance, self-confidence, and social skills. To ensure that teachers are still following the curriculum guidelines, academic lessons such as maths, english, science, history, geography could be adjusted to incorporate physical activity. Thus, ensuring that students achieve academic success while developing fundamental motor skills.

Movement breaks are already used by some teachers and students, yet many teachers often find it stressful to incorporate these within the day. Therefore, the following design proposal will focus on combining movement into the academic lessons they provide.

AIM

Design a program, and supporting equipment, that could allow teachers to integrate physical activity with their learning objectives.

OBJECTIVES

- Develop opportunities for physical activity to be integrated alongside academic activities
- Design a program and appropriate equipment to improve the development of children's motor skills

JUSTIFICATION

Physical activity is an important aspect of health and development, as identified by Greico et al. (2015) and reiterated by many of the research participants. The current research findings indicate that children are not spending enough time physically active during their primary school years (Pawlowski et al., 2016). In order for children to engage in physical activity they need to develop fundamental motor skills (Valentini et al., 2016).

As children spend up to 30 hours at school, and 92% of this time is sedentary (Grieco et al., 2015), it is the best place to provide more opportunities for physical activity. The pressure of the curriculum, strongly indicated by interviewees, often impedes physical activity being incorporated. Even with improvements made to the curriculum to include movement breaks, lunchtime play initiatives, and regularly scheduled Physical Education lessons, children are still not participating in the required amount of physical activity set by the World Health Organisation (Pawlowski, 2016).

The high academic standards need to continue to be reached. The participants identified that integrating more physical activity into the curriculum is something of interest. Therefore, this opportunitiy was chosen for exploration. This will work to alleviate pressure put on teachers, improve children's physical skills and academic performance, establish healthy habits, and shift thinking that learning is a sedentary activity.

If physical activity becomes a part of a child's daily routine children will be more likely to participate. A routine or schedule for activitites would also work to improve teachers confidence at implimenting physical activity. Therefore, by developing programs and equipment that allows teachers to integrate academic and physical learning within the classroom, they can provide a holistic education to their students ensuring their future success.

CONTEXT

The program and the design of necessary equipment will be tailored to the meet requirements of the curriculum implemented by the Australian Department of Education, and the needs of teachers and students. However, this program could also see offshore potential as many Western countries see children not reaching the recommended daily levels of physical activity (Pawlowski, 2016).

DESIGN CRITERIA (PROGRAM)

Curriculum Requirements

The Australian Curriculum aims to set consistent national standards to improve the learning outcomes of all young Australians (Australian Curriculum, 2020). The eight learning areas outlined are English, Mathematics, Science, Humanities and Social Sciences, The Arts, Technologies, Health and Physical Education, and Languages. This means that the programs should work within these areas of academics to support learning and improve physical skills Therefore, the incorporation of physical activity should not take away from academic learning, or be required for every lesson as that would exhaust children, causing more problems.

Routine

For the program to be successful with teachers and students, the program needs to be incorporated as a part of a routine.

Cost

Funding is often required to develop programs, provide resources, and supply equipment. Therefore the cost of the program development should **be inexpensive**.

Resources

The program may need both human resources and equipment to achieve desired outcomes. Many schools only have a single classroom teacher to 20+ students, therefore this program needs to allow teachers to provide programs alone with the assistance of equipment.

Sustainability

For the development of holistic lessons to be successful, it is important that the idea is sustainable. If teachers are not willing to implement the activities, if it is too hard to engage students, or doesn't stay up to date with the curriculum, then it will not achieve what it sets out to. Therefore, it is important to ensure that the program is inline with the core principles of the curriculum so that if it does change it can be adapted easily.

Fun and Engaging

The program needs to be fun to entice students to participate. Although, fun alone is not enough to develop a routine behaviour. Therefore, children need to be engaged through encouragement and feedback to provide a postive experience working towards improving skills.

Easy to Understand

If the program is not easy for teachers and children to understand then it will be more likely that the program will not be provided or children will not participate.

DESIGN CRITERIA (EQUIPMENT)

Cost

Funding is often required to purchase new equipment. Speciality equipment in particular can be expensive to manufacture due to higher manufacturing standards, materials used, and smaller quantities for production. Therefore it is important that equipment is affordable to schools and does not require sophisticated manufacturing operations.

Materials

The materials used need to be safe for children. They need to be non-toxic, durable, and easy to clean.

Sustainability

The materials and manufacturing processes also need to be sustainable to ensure that the process can be continued, isn't causing financial hardships, and isn't contributing to ecological issues such as climate change or landfill.

Safety

The equipment needs to be safe for children to use, but not limit their abilties to explore risk.

Ergonomics

The usability requirement needs to be considered. Children will be the main users of equipment, but educators also need to be able to use equipment when providing demonstrations to children.

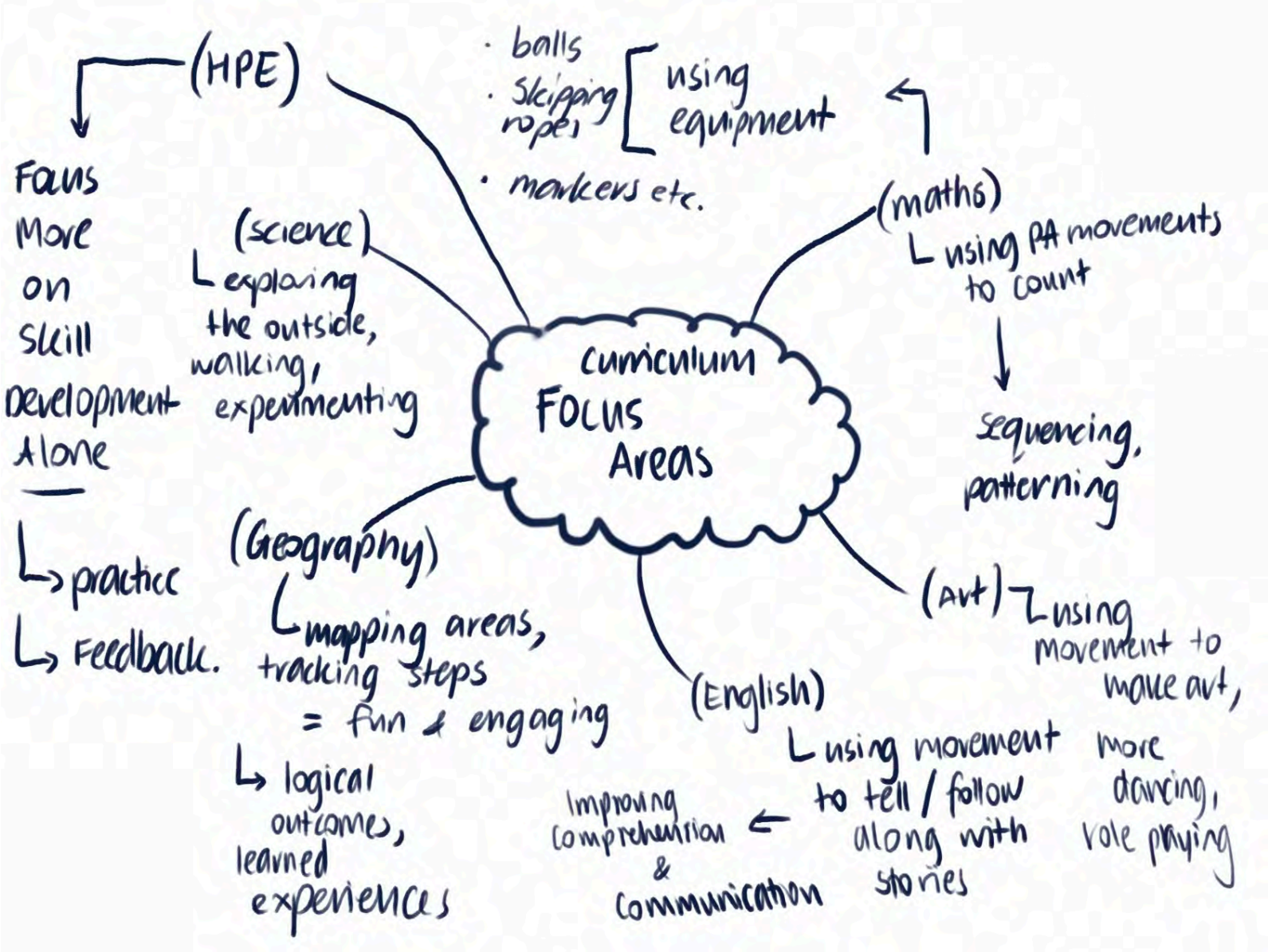
Fun and Engaging

If children do not find using the equipment fun or engaging then the equipment's purpose will be lost as children will more likely not want to use the equipment.

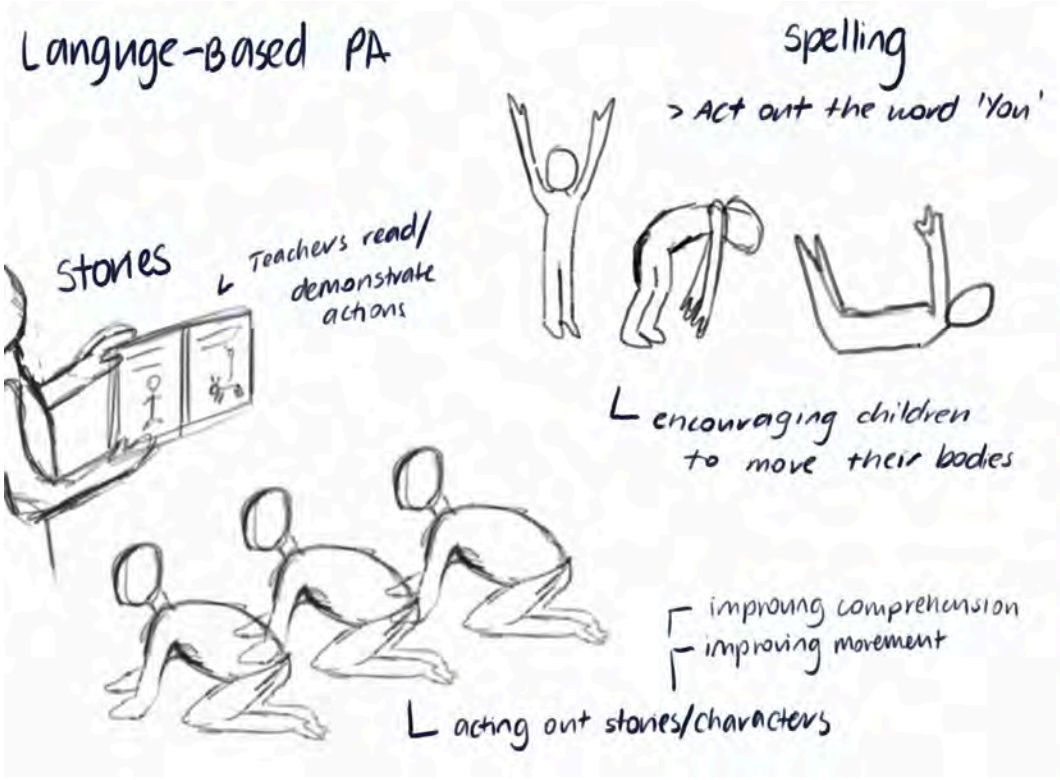
Easy to Understand

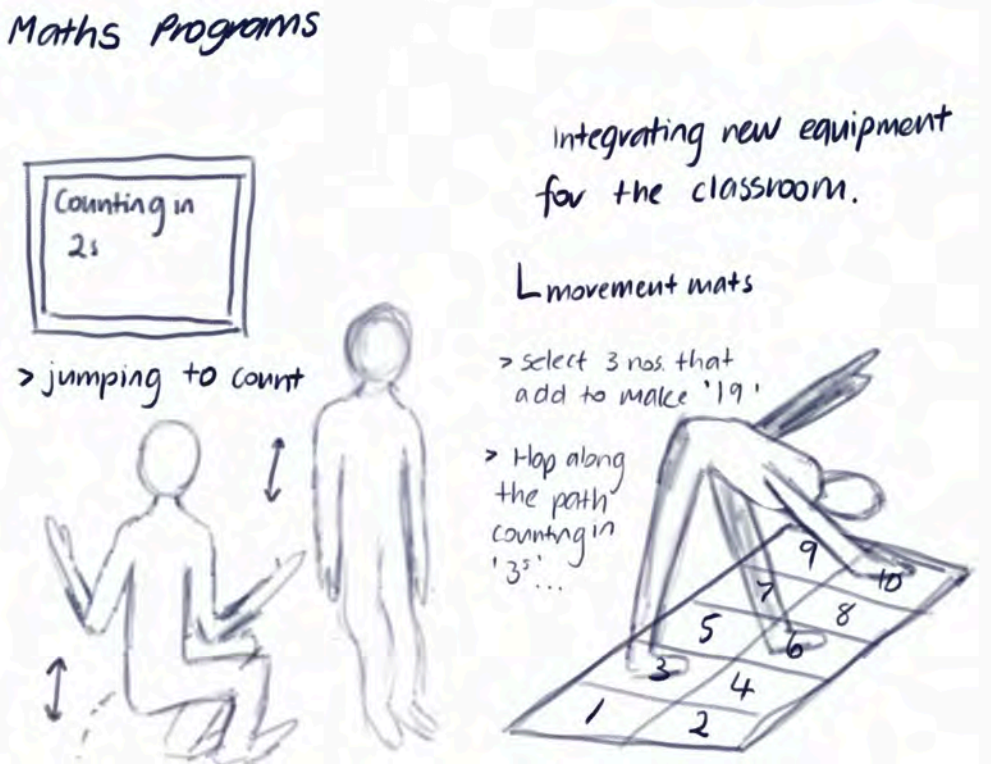
If children and teachers do not find using the equipment easy to use or incorporate alongside the program, then the equipment's purpose will be lost as children will more likely not want to use the equipment.

MIND MAP

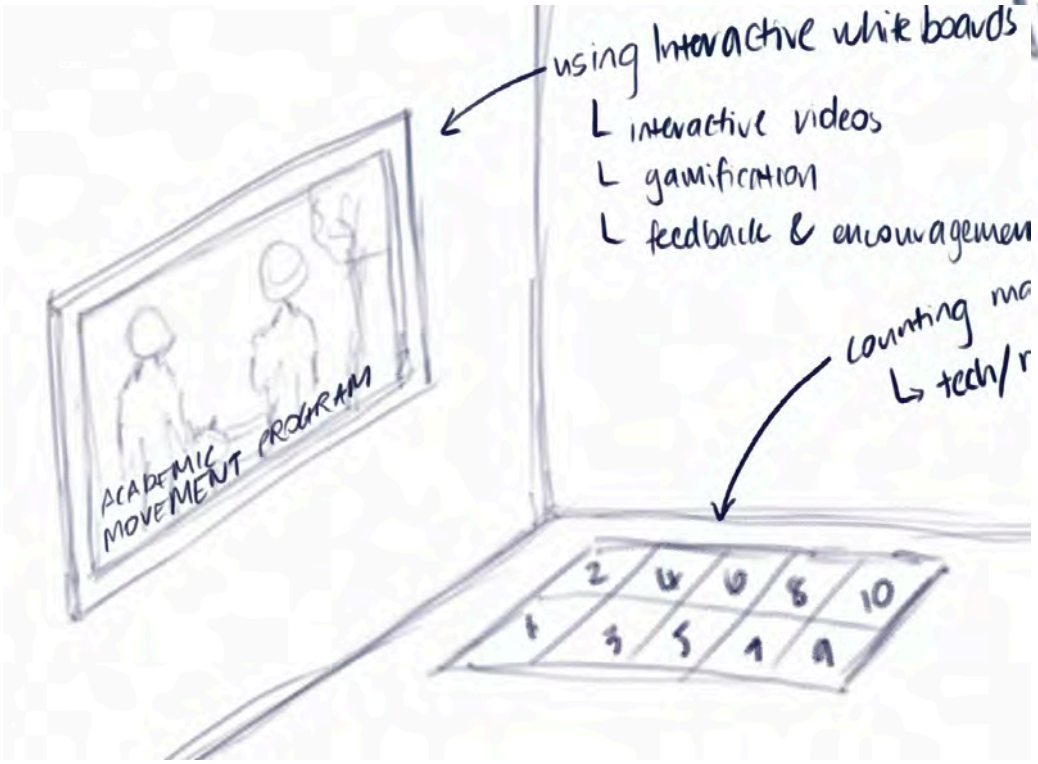

curriculum
FOCUS
Areas
(HPE)
Focus
More
on
skill
development
alone
practice
Feedback.
balls
skipping ropes
markers etc.
using equipment
(science)
exploring the outside, walking, experimenting
(maths)
using PA movements to count
sequencing, patterning
(Geography)
mapping areas, tracking steps
= fun & engaging
logical outcomes, learned experiences
(English)
using movement to tell / follow along with stories
Improving comprehension & communication
(Art)
using movement to make art,
more dancing, role playing

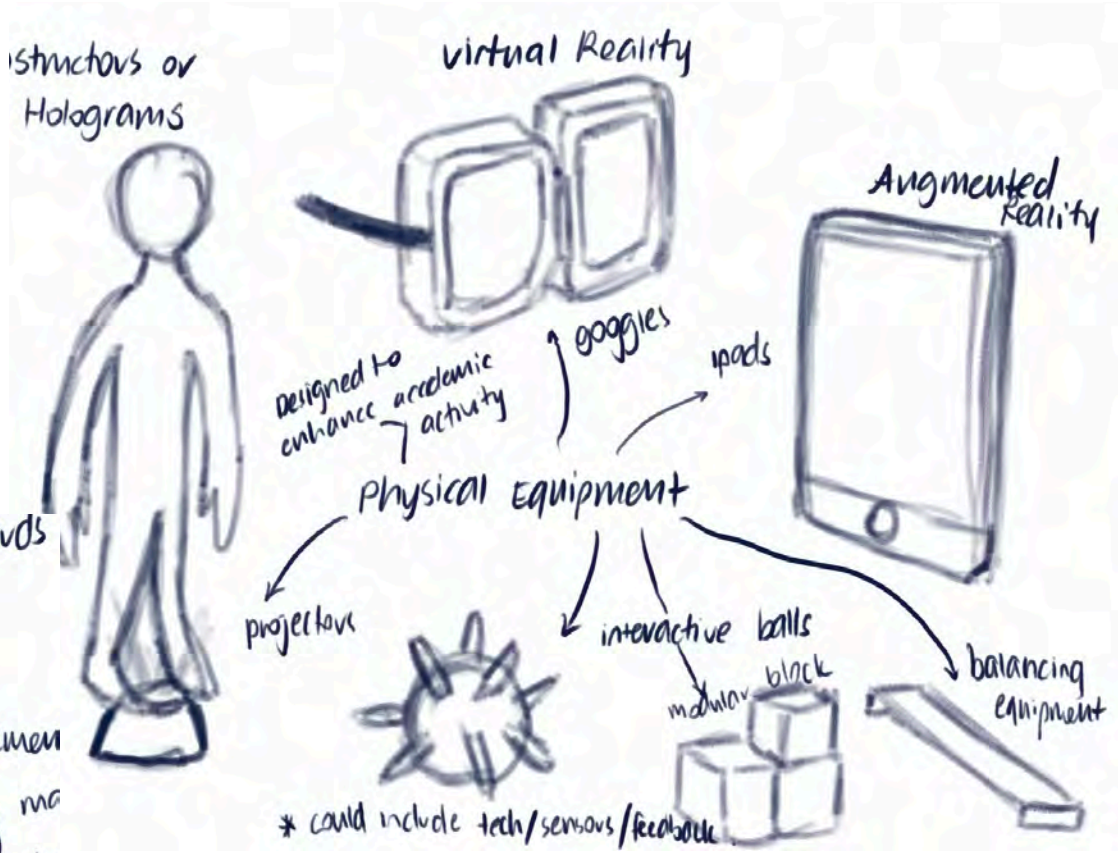
PROGRAM EXPLORATION





EQUIPMENT EXPLORATION





DESIGN PROCESS

1. Design Research Phase 1 (New Programs)

- Current programs
- Curriculum Requirements
- New ideas presented by Research Participants
- New ideas presented by Academic Researchers

2. Early Stage Design 1

- Develop at least 8+ different programs that could be incorporated into academic lessons as outlined by the Australian Curriculum

3. Concept Refinement 1

- Narrow down viable options with assistance from Research Participants

4. Design Detail 1

- Refine programs and establish need for necessary resources and equipment

5. Design Research Phase 2 (Equipment/Resources for Developed Program)

- Current equipment used
- Feasibility of Equipment
- New equipment ideas discussed with Research Participants
- New equipment ideas presented by Academic Researchers

6. Early Stage Design 2

- Develop equipment 8+ equipment/resource options that could be combined with Concept Refinement 1 and Design Detail 1 stages

7. Concept Refinement 2

- Narrow down viable options with assistance from Research Participants
- Refine ideas through model making, testing, and further research
- Select best idea with assistance from Research Participants

8. Design Detail 2

- Refine equipment design, explore manufacturing, afterlife etc.

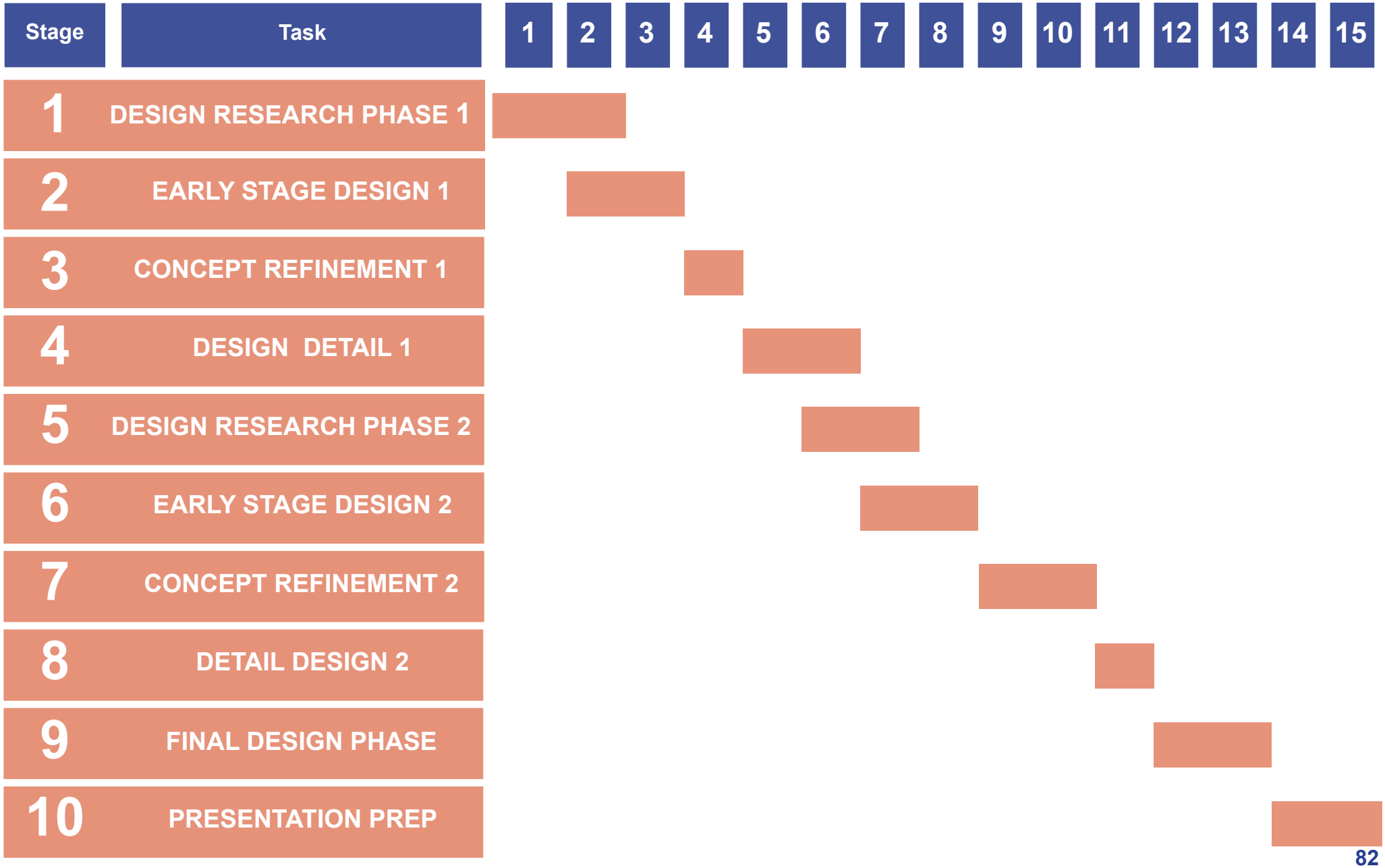
9. Final Design Stage

- Make a high quality model and test with Research Participants
- Refine from the results of the test
- Design Freeze

9. Presentation Preperation

- Develop script
- Design Powerpoint
- Produce high quality model
- Design Posters
- Print Research Document

SCHEDULE


Stage
Task
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
1 DESIGN RESEARCH PHASE 1
2 EARLY STAGE DESIGN 1
3 CONCEPT REFINEMENT 1
4 DESIGN DETAIL 1
5 DESIGN RESEARCH PHASE 2
6 EARLY STAGE DESIGN 2
7 CONCEPT REFINEMENT 2
8 DETAIL DESIGN 2
9 FINAL DESIGN PHASE
10 PRESENTATION PREP

09

JUSTIFICATION

INTRODUCTION

The Education System shapes the lives of young children, providing a foundation for learning and development. As the system has shifted towards seeing students advance academically, there has been a noticeable deterioration in children's fundamental motor skills. Ultimately, the skills they lack such as postural control, hand eye coordination and dexterity, are those that are needed to successfully complete the curriculum requirements. Therefore, this has posed many issues for both students and their classroom teachers.

Teachers are tasked to educate children and are often under immense pressure to produce high performing students. In many instances, the academic performance of the students can impact school funding. Thus, teachers often prioritize academic lessons such as English and Mathematics. These lessons are important, but they are often sedentary. Movement could be used within these lessons to enhance children's learning and ensure they are active throughout the day.

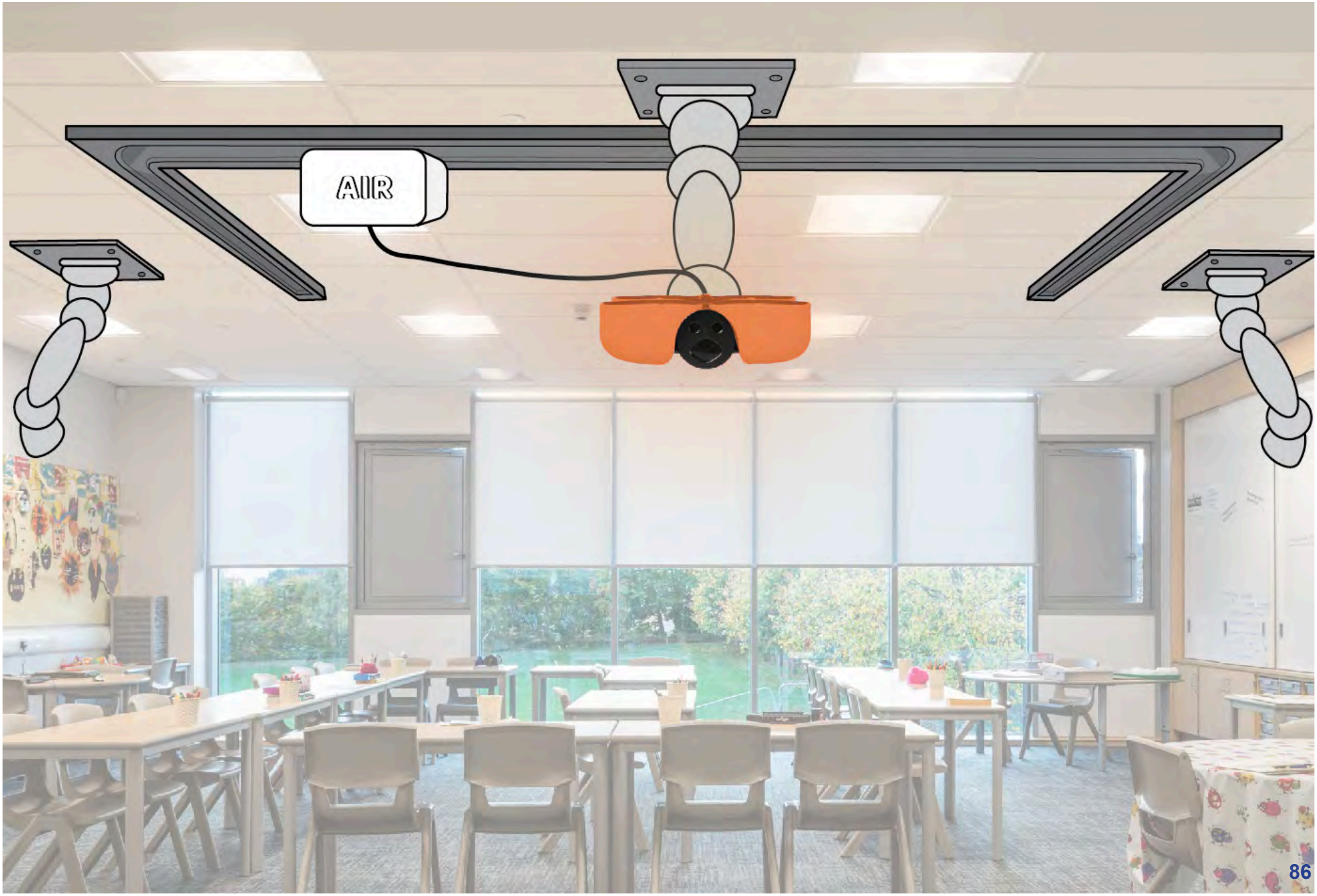
The curriculum is not the only factor to consider. Screen-based sedentary activities such as watching television and playing video games have shifted children's behaviours. Many children are now opting to sit for long periods of time, engaging with their favourite shows rather than participating in active play or physical activities. Whilst some technologies and television shows are promoting exercise and attempting to engage children in physical activity, it is not enough and does not always encourage the necessary movements.

The research into this topic outlined the significant need for children to incorporate physical activity more throughout their day. This is not only to ensure they have the skills to perform well at school, but also to provide a foundation for good physical and mental health. Teachers and parents agree that children need to be more physically active, but they don't want it to impact their children's focus on academics. Therefore, a system has been designed to shift learning from sedentary to active. The system uses existing and emerging technologies alongside teaching strategies to combine the importance of academics with the necessity of movement.

AIR SYSTEM

AIR is a systems based design, seeking to improve the classroom experience of children. The system enables teachers to enhance their lesson delivery using technology and interaction. Through a drone projection system, a variety of interactive interfaces, ceiling mounted charging stations, a failsafe safety system, and an app, any space can be transformed. By projecting augmented, interactive interfaces, children can now learn and move together. Thus, achieving a solution that has a focus on academics whilst encouraging children to shift from sedentary to active learning. The real key being that the system can create a learning environment to suit the needs of the children and the teacher.

The goal for the systems design was to ensure that teachers had the flexibility and the time they desired to tailor the lessons to their students. As teachers would operate the system, they needed to be comfortable and excited to use it. Currently, programs within the Education system are promoting the use of drones as a part of the science and technology curriculum areas. With this, many teachers are becoming more familiar with the technology. After all, it will be up to the teachers to ensure that their students are able to use the system.


AIR

AIR DRONE

The AIR drone is the heart of the system. It operates autonomously, using sensors and safety algorithms to navigate the classroom and run lessons. This enables it to avoid objects and people within the space and locate the docking stations. Why a drone? Well, when looking into existing interactive systems they either can't be moved, need a lot of equipment, take up floor space which is often limited in classrooms, and require time that teachers don't have to set them up and put them away. The AIR System solves this. It is a ceiling based system that does not take up floor space, requires minimal set up time, and can be easily controlled through an app.

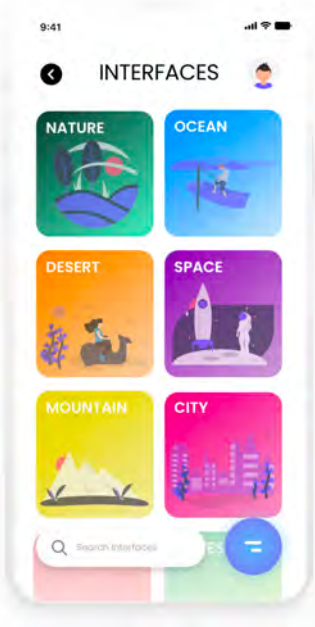
The drone has a small high resolution projector, located in the 'mouth' to display the interfaces. Along with two cameras placed in the 'eyes', a vision camera used for filming, and an infrared camera that can track children's movements to create interactive elements. The anthropomorphic design elements will encourage children to use the system

There is also a bluetooth speaker inside the drone body that can provide audio alongside the projection. The audio could be used to give instructions or play music and sound effects. Lights have also been added to the bottom of the drone which can change its colour. The lights will flash to indicate to teachers to check the app if their attention is required.

AIR APP

The app controls the system. Rather than a remote control, the drone can be operated using the app. The app can be accessed on any smart device. The flight path of the drone will be determined by the location selected in the app. The drone will then autonomously interact with the ceiling mounted docking stations and rail tether safety system. The activities run from the location will also be selected using the app before the drone takes flight, but can be changed at any point.

It was important to consider the needs of teachers when designing the app. The interface design had to be easy to use to save time and run the system effectively. A variety of educational apps were analyzed to provide a foundation for usability aspects, aesthetics, and necessary features. The final design is bright and colourful to reinforce the education element and promote that the system is designed to promote creativity and activity to children.



INTERACTIVE INTERFACES

The interactive projection is designed for children. The interactive elements have been designed to change their behaviour. Facilitated by the physical system components, the ability to engage children and easily adapt lessons using technology and gamification will advance the delivery of educational content. By providing teachers with a foundation to shift children from sedentary, screen or worksheet based lessons to more active. Using augmentation, interaction and creativity, AIR System will make it easier for teachers to provide active lessons. These elements will also encourage children to participate and keep them engaged in active learning.

The interfaces designed for the base pack are inspired by the outdoors. The aesthetic is bright and colourful, but simple enough that it doesn't detract from the educational content. The designs could definitely be expanded upon. Through continued updates, expansion packs and giving teachers the ability to project their own content, they will have access to unlimited interactive interfaces. This was a really exciting feature that teachers noted during user testing.

CELING MOUNTED DOCKING STATTIONS

The docking stations hold the drone in place and charge it using electromagnetic technology. This technology will allow the drone to autonomously locate and connect to the arm. The connection point to the docking station is at the back of the drone. This allows the drone to be tilted to optimise projection.

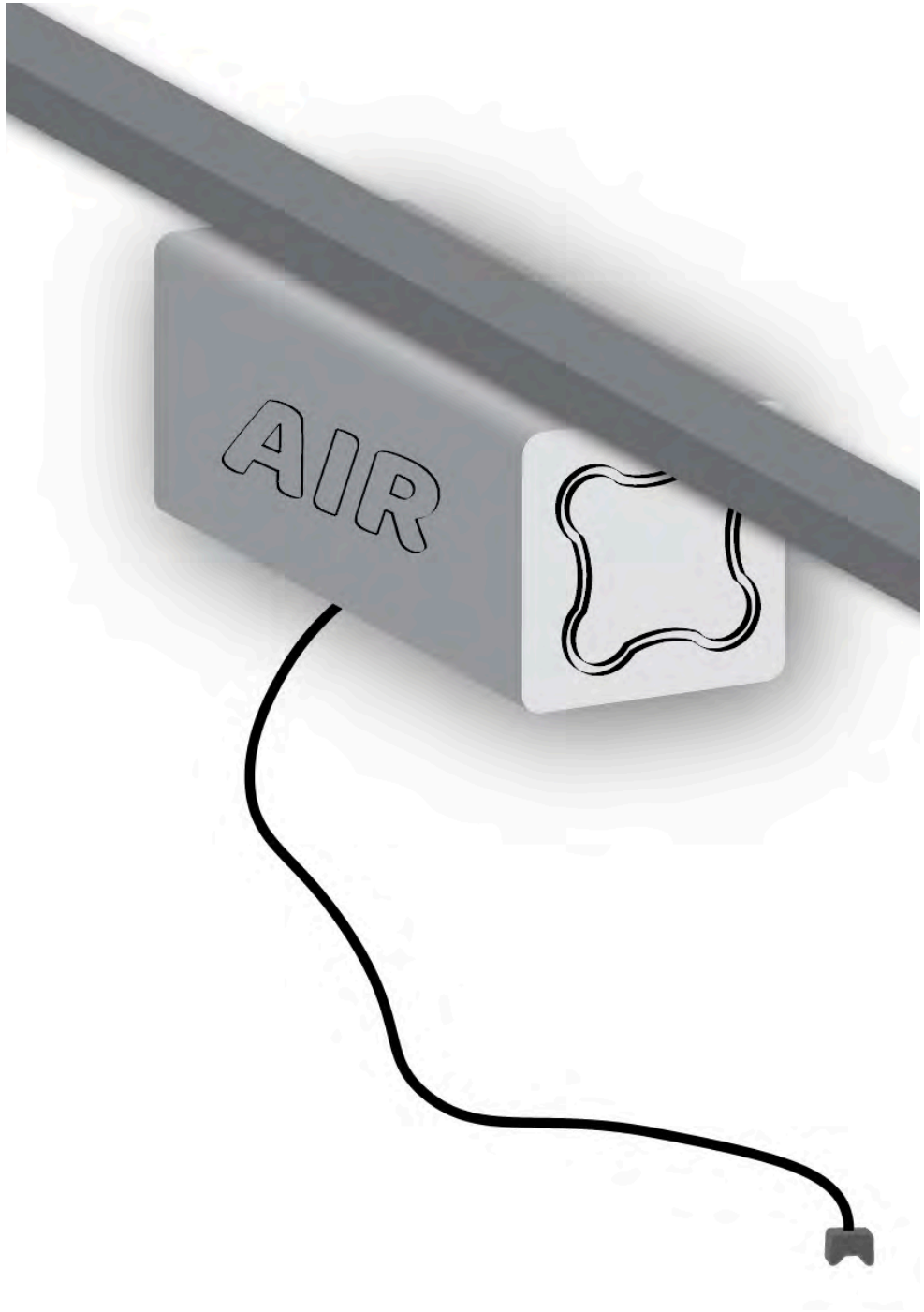
The arm is made of three components that can allow custom configurations. The height of the arm can be raised, lowered or rotated to achieve the best projection. This also allows the drone to project in multiple directions from one location. The drone can stay docked in the selected location until it is needed again. This eliminates the need for storage.

The ceiling mounts can be installed on any ceiling, taking into consideration existing infrastructure and fixtures. Qualified electricians will install the system and test its operation before it can be used within the classroom. This will be completed in line with classroom risk assessments and health and safety codes.

SAFETY TETHER RAIL SYSTEM

To ensure the system is safe, the drone is connected to a tether system before it takes flight. The safety tether will move to the selected location near the selected docking station. If there is a system fault with the drone, the tether will catch the drone before it falls. This will keep the children underneath the drone safe and the drone damage free.

The safety system can also be adapted to any classroom ceiling. The rail system can be customised to work around the existing ceiling structure, height, and fixtures such as lights and fans. An electrician will install the system and test its operation before it can be used within the classroom. This will be completed in line with classroom risk assessments and health and safety codes.



SCENARIOS

The layout of the system will depend on the classroom space. The sequence of use will also depend on whether teachers want to provide interactive lessons, games or use their own images to project. Some examples of system layouts and interfaces can be seen to the right.

Scenario One:

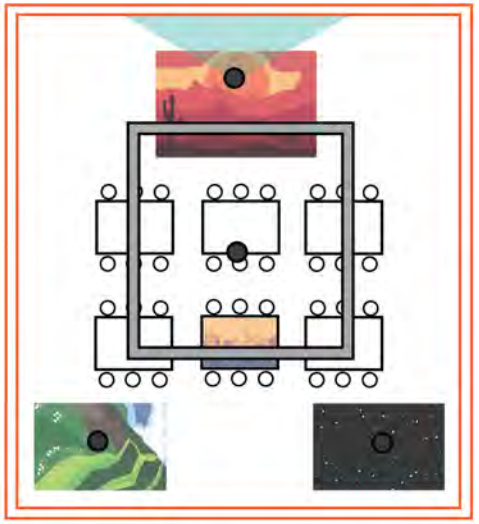
This is an example showcasing a large classroom. It has multiple locations for projections. These locations allow projections on floor areas, walls, and desks. Multiple drones can be used within this space to run different activities at the same time.

Scenario Two:

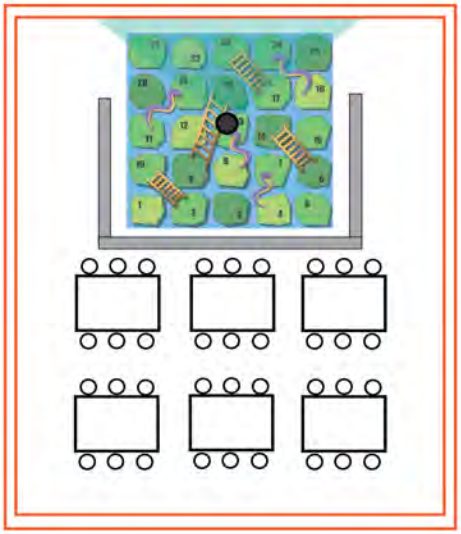
This is an example of a small classroom. It has one available docking location. From this point, the drone could project onto the floor or the wall. This would ensure that the system could be versatile within the space.

Scenario Three:

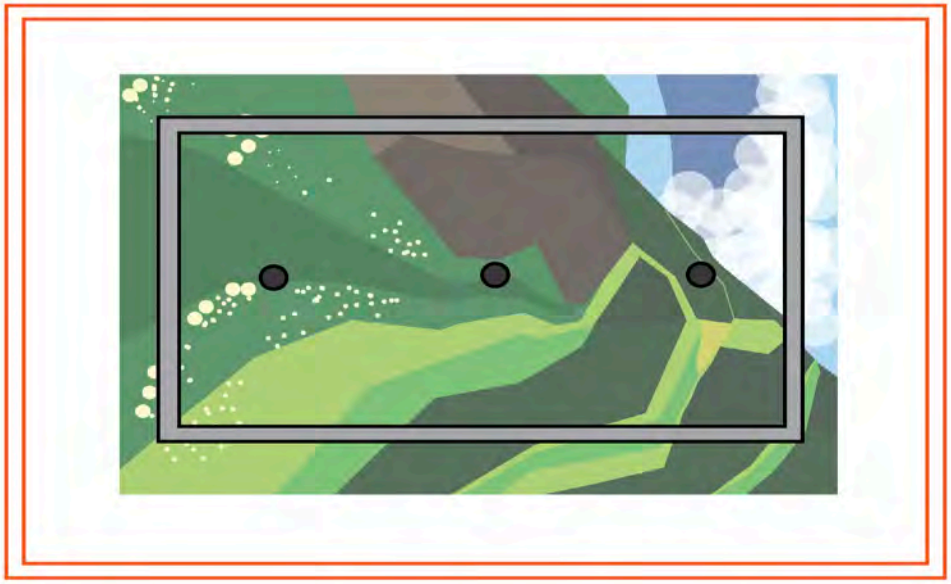
This is an example of a large gym or outdoor space. It has three ceiling mounts in a row which, if you had multiple drones, could work to create a large interactive space. The layout of the docking stations could also provide 3 smaller group projected areas for smaller games or physically active lessons.



Scenario One: System layout for a large classroom with multiple available docking locations.



Scenario Two: System layout for a small classroom with only one available docking location.



Scenario Three: System layout for a large space such as a gym with multiple available docking locations.

PEOPLE

There are two key users of the system: primary school teachers and students. The system's design focussed on providing teachers with the equipment, the time and opportunities to incorporate more physical activity within the classroom. As well as, piquing the interests of children to encourage them to engage in the active lessons provided.

It was important that teachers were not intimidated by the system or found it difficult to use. The continued willingness for teachers to implement the system in the classroom would lead to children being more active. It is vital that the design inspired teachers, made it easier, and gave them more freedom within their classrooms. Therefore, the success of the system doesn't just depend on improving children's active behaviours, but also how willing teachers are to use the system.

ACTIVITIES

Key activities of teachers and their students were considered when designing the new system. The curriculum activities provided by teachers were analysed. This indicated that there is a limited amount of scheduled physical activity per week within the curriculum. It was mostly up to the children to be physically active during their lunch breaks. Which meant that many children did not meet the 60 minutes minimum of physical activity per day.

In an effort to maximise the time children spend being active in class, the AIR system is designed to run in classrooms. In particular, English and mathematics lessons as these take up the most amount of time within the curriculum. There are also opportunities to incorporate movement when learning these subjects. For example, Yumi Deadly Maths is a program that encourages physical movement to learn fundamental mathematics. As indicated by a teacher during user testing, the system could benefit such teaching methods. They indicated it would make it easier for them to set up activities and more beneficial for learners.

CONTEXT

Schools could implement the system in a variety of ways.

- Within classrooms by teachers to provide physically active lessons or games for students.
- Within classrooms by teachers to project their own images or videos.
- Undercover areas or gyms where teachers could use projections to make large interactive areas.

TECHNOLOGY

The main technology of the system is an unmanned aerial vehicle (UAV) or drone. Drones are becoming increasingly more popular and commonplace. The drone is autonomous, only requiring minimal control from an app. The app will allow location, lessons, and drone aesthetics to be chosen when in use. The drone uses machine learning and algorithms to fly within classrooms, connect with the system, and run interactive lessons. With the advancements in UAV technology, the Internet of Things (IoT), machine learning, and automation, the system becomes increasingly more possible, more advanced, and safer to use.

The ceiling mounted docking stations use electromagnetic technology to hold the drone in place and charge it. This is known as inductive charging. Delivery drones are currently using inductive charging platforms and gps location to dock between flights. This allows the drones to find the correct location and charge its battery. The ceiling mounted docking stations will use this futuristic technology within the system.

The system also incorporates projection and augmented reality. The capabilities of small projector systems continue to improve. The interfaces for AIR System involves augmentation and interaction through the use of a projector. With the continued improvement of this technology combined with motion tracking, the interactive elements of the interface will continue to evolve.

DESIGN PROCESS

The design of the AIR System was completed in two phases: the research phase and design development phase. These phases utilize the Double Diamond research methodology. The Double Diamond incorporates four stages: discover, define, develop, and deliver. These stages can be seen within the different design phases, allowing for convergent and divergent exploration.

Research Phase

The research phase focussed on using triangulation to uncover design opportunities. A literature review exploring the topic of children's engagement in physical activities in primary schools was undertaken. The findings from this research provided a foundation for design exploration.

Following on from the literature review, expert interviews were conducted and a survey was deployed. A thematic analysis was used to explore the results from the qualitative research methods. The themes uncovered presented several design opportunities.

Design Development Phase

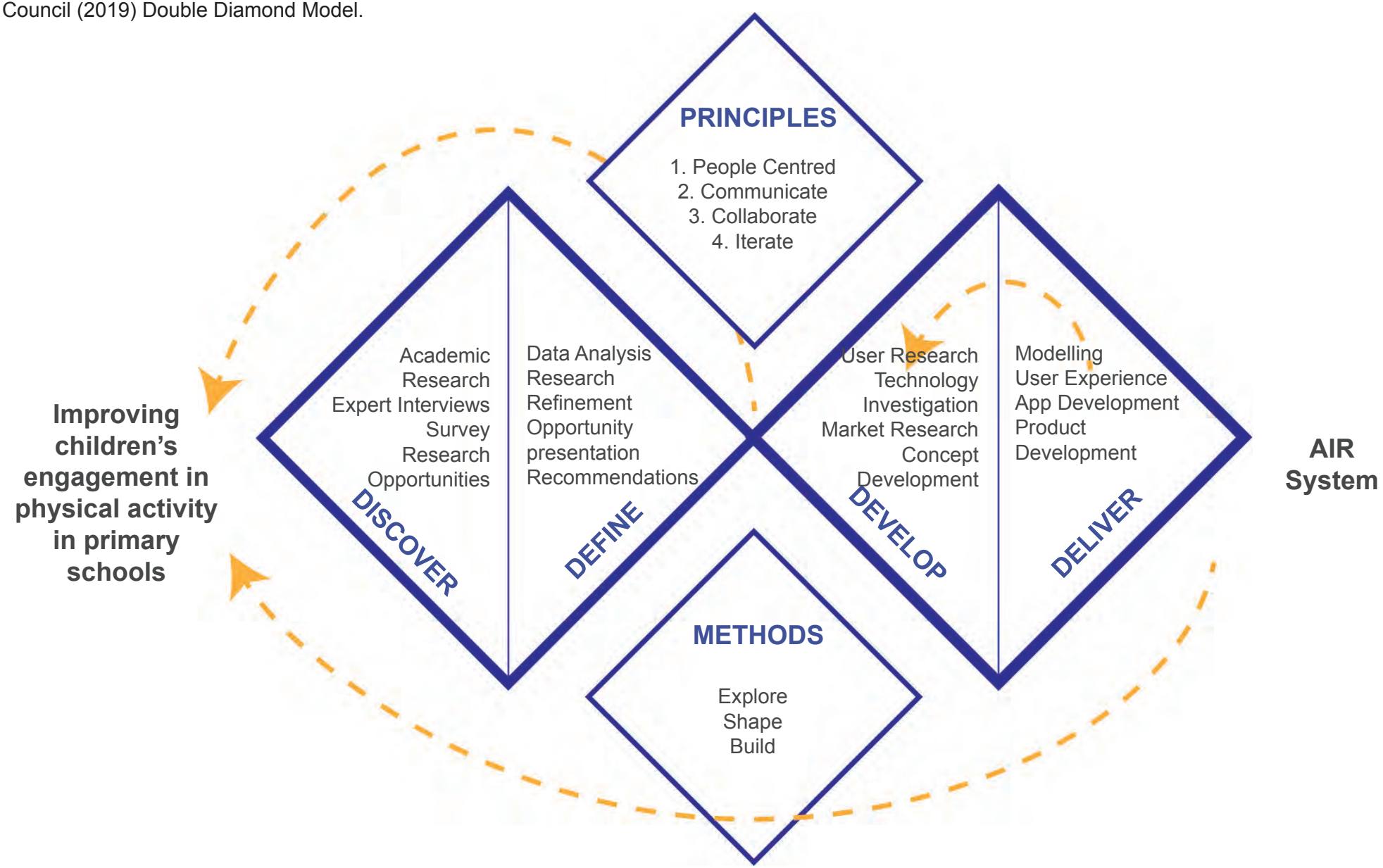
The initial stages of design development involved investigating how teachers educate their students. This meant exploring their daily schedule and the types of lessons they provided. Journey maps were also created to find opportunities throughout the school day for the incorporation of physical activity.

Different technologies such as augmented reality and projection were investigated. There are art installations such as those by TeamLab that use this technology to encourage physical activity and play. The potential for these technologies to adapt lessons, incorporate gamification elements, and provide an interactive experience were the inspiration for the features ofAIR System.

The needs of teachers and students from the system were considered throughout the design process. User testing was conducted to gather feedback on the design and make improvements. This took into consideration safety aspects, user experience, interface design, technical details, adaptability, familiarity with technology, scenarios of use, and potential uses for the system not already addressed.

Using the information collected throughout the design process, the final design was refined. Iterations made to the design ensured that the AIR System was successful at addressing the opportunity for technology to encourage students to participate in active lessons. The design also had to ensure that teachers were willing to use the system to provide ample opportunities for children to increase their physically active behaviours.

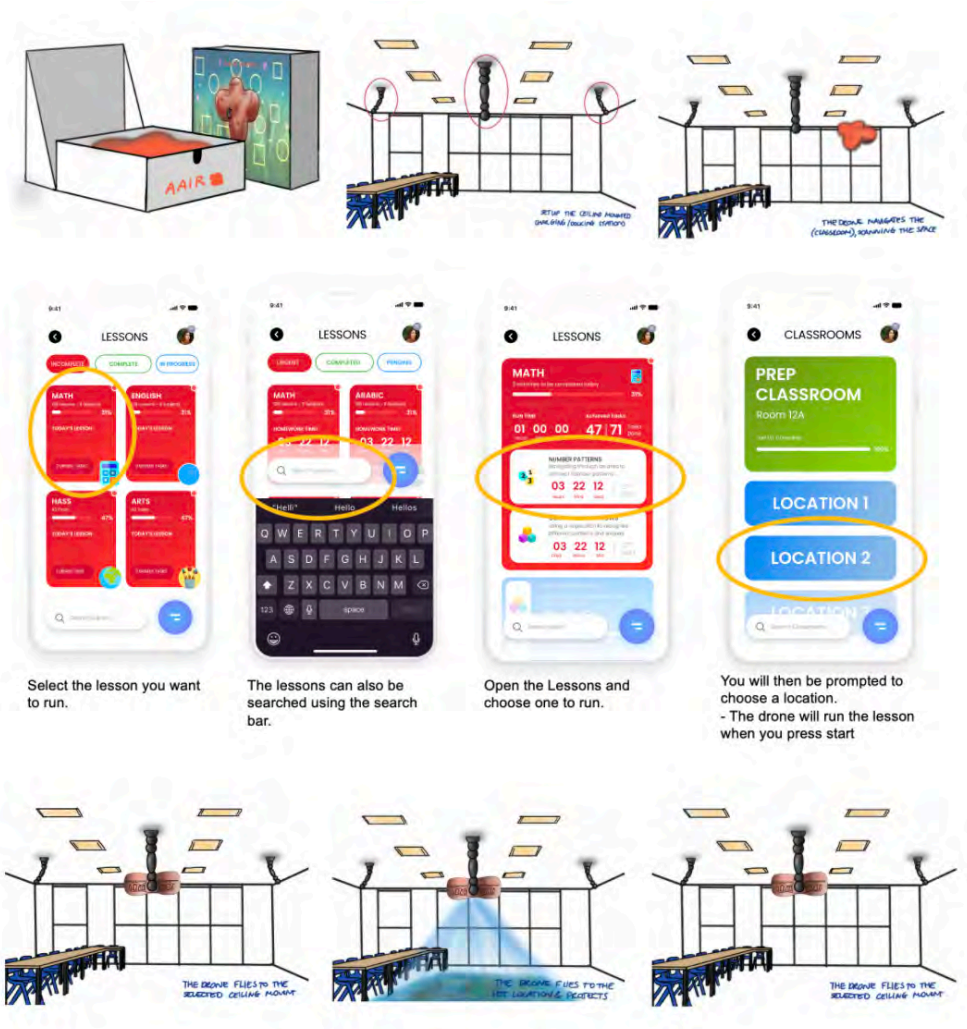
Design process used to develop AIR System, adapted from the Design Council (2019) Double Diamond Model.



VALIDATION

From the research findings presented, there is a significant need for children to be more physically active. This focussed on teachers in their classroom providing more opportunities for this. Also, how they currently use technology to facilitate this and how it could be improved. With many teachers already using technology within the classroom such as interactive whiteboards and ipads to provide physically active lessons or intermittent brain breaks, there was the potential to design a new solution using technology to change this.

To validate the use of the drone and the system's design, a breakdown of the design details and a storyboard of the user experience was sent to teachers. This process involved them providing feedback on how they might use the system and potential considerations they wanted me to address.



A collection of images from the storyboard sent to users.

FEEDBACK

In general, the feedback for the system was very positive. Teachers were excited about the educational possibilities for the system. The main concern about the system was the safety aspect of flying drones in the classroom. To which, the teachers thought that the safety system would mitigate this risk and liked the tether system idea.

Teachers loved the idea of the docking stations as a fixed point of projection. They wanted the drone to be able to dock to these points autonomously. They also thought that the idea of the drone charging through these stations was great, as many of the devices they use in the classroom required teachers to charge them. The fact that the system was high up and out of the way was another aspect of the system they appreciated.

Teachers were particularly interested in the app and the interfaces. They stated that they could easily incorporate the interfaces into a variety of lessons. In addition to the included interfaces, they wanted to be able to project their own content to give them additional uses for the system. They suggested that teachers wanted to have the ability to be creative and have control over their lessons which would keep them excited to use the system.

In addition, teachers wanted the educational benefits of the system promoted alongside physical activity. They stated that, “the design would empower kids in their learning and definitely not just from a gross motor perspective… bring forward a bit more the academic curriculum importance of your design”. Teachers indicated that the AIR System could significantly improve how they teach children, giving them the flexibility, time and opportunities to provide creative content and promote physical activity.

BUSINESS CASE

The AIR System has been designed to make it easier for teachers to incorporate more physical activity into the daily lives of their students. The system aims to make it more convenient, time saving, customisable, and engaging than current ‘active lesson’ delivery. The successful implementation of these lessons also relies upon cost considerations and demonstrated improvements to children’s learning. A Business Model Canvas outlines the aspects of the design.

IMPLIMENTATION

1. Schools would be able to purchase AIR System through an educational supplier

2. Depending on whether the school is private or public the funding will be acquired differently. For State schools, they are funded by a shared responsibility of the State and Territory Governments and the Australian Government. Non-government schools also receive funding from the government, but through fees, charges, private donations, and income provide significant income from private sources that supplement this funding.

3. The investment in the system is an investment in the future of children. The success of the system is not based on monetary gain, but the demonstrated improvement to children’s learning, physical health, and mental wellbeing. The system will have long term societal benefits, meaning that the system will be an investment into the future success of people.

BUSINESS MODEL CANVAS

The business model canvas outlines the business structure for AIR System.

Key Partners

Any classroom could implement this system. Therefore, the key partners would depend on the schools that purchase the system. The stakeholders for the system will include the classroom teachers and their students, along with the school principal. Parents of the students will also be considered stakeholders in the system. The funding providers such as the Australian government, state or territory government, and other donors will also be considered stakeholders.

Key Activities

Ordering:

Schools can use their funding to order AIR systems from educational suppliers. The system will come with the AIR Drone, the necessary number or docking stations, the necessary number or customisable safety systems, and access to the app and interfaces. Additional interfaces and features will incur additional cost.

Installation and Set-up:

Professional Electricians will install the system within locations around schools. Schools will need to create an AIR access account that will enable teachers to log in. From there, teachers can set up and operate their classroom drone.

Usage:

Teachers will use the app to operate the system. The drone runs autonomously which reduces the amount of set up required from teachers. The drone will stay docked and charging in the ceiling mounted docking station until its next use.

***Maintenance*:**

Regular maintenance will be required to ensure that the system is operating safely.

Key Resources

AIR System Projects:

For the system to run effectively, the AIR drone, the Ceiling Mounted Docking Stations, and the Rail Tether Safety System are required. The products within this system will ensure that it runs effectively and is operating safely.

AIR System Application and Interfaces:

The application operates the system. The continued upkeep of the app is vital to ensure the system operates effectively. The interactive interfaces will also need to be updated to accommodate the feedback of teachers so they continue to use the system.

Intellectual Property:

Intellectual property laws will protect the design of the system. This service will provide rights to the developers of AIR and ensure market dominance within the educational product development sector.

Customer Relationships

AIR will continue to maintain strong relationships between the company and its stakeholders. This relationship will allow for the feedback and user requirements of stakeholders to work towards continuing to update the system elements and improving the system to ensure its success.

Customer Segments

Teachers:

Teachers would use the system to adapt their lessons, and shift their content delivery from sedentary to active. The teachers would mainly interact with the app.

Students:

Students would use the system to assist in learning lesson content and be more physically active. The children would mainly interact with the interactive interfaces.

Channels

An inservice will be used to notify and educate schools on the development of this system. Inservices are often provided to encourage teachers to incorporate new learning approaches, equipment, technologies etc. Drone inservices have recently been provided to teachers of primary schools, informing them of how they can incorporate drones in lessons - whether that is children flying them, building them or generally having fun with them. The inservice will focus on the system's educational benefits and make it easier and make them feel more comfortable about incorporating them in the classroom.

DESIGN DISCUSSION

The design and development of the AIR System used the criteria outlined on pages 76 and 77. There were specific criteria stipulated for both the program being developed and the equipment to be designed. The criteria outlined in this section has been updated to align with the system developed. The 'program' criteria now refers to the design of the interactive interfaces and mobile application. The 'equipment' criteria refers to the physical elements of the system such as the drone, the ceiling mounted docking stations and the safety tether rail system.

The Program: Interactive Interfaces and App

Curriculum requirements:

The design allows teachers to integrate physical activities into curriculum based lessons. The curriculum content does not change, just the way teachers deliver the learning outcomes.

Routine:

As the interfaces will work alongside curriculum activities, the incorporation of physical activities and the system will become a part of the users routine.

Cost:

The interactive lessons will be included in the cost of the system. Schools can choose to upgrade their access to interfaces and lessons from those included in the base pack.

Resources:

The resources required will be the physical system components and access to smart devices to run the app.

Sustainability:

The system has been designed to last. It can be continually upgraded in future years. The interfaces don't have any physical elements, therefore it doesn't need to be disposed of.

Fun and Engaging:

The lessons will be fun for children and add value to their learning experience.

Easy to Understand:

The app and the interfaces are intuitive to use. Teachers can easily navigate the app and control the system. Children can easily interact with the interfaces, doing movements to engage with the different elements.

Physical Equipment: Drone, Docking Stations, Safety System

Cost:

Schools will invest in the system. The potential of the system to change how children learn and improve their physical and mental health will outweigh the cost of the system.

Materials:

The physical system products will use durable materials to ensure that the system lasts.

Sustainability:

As the system uses durable products, this will extend the product life of the physical system elements. The manufacturing process will incorporate sustainable practices where possible.

Safety:

The system has been designed to ensure that it operates safely every time it is used.

Ergonomics:

As the physical system elements are not designed to be interacted with, ergonomic requirements were not necessary in this case. Although, the inability for children in particular to reach the system or get injured were the main ergonomic considerations. This meant that the physical components had to be up high enough so children could not interfere with the physical equipment and just focussed on the interactive interfaces.

Easy to Understand:

The system had to be easy to install and maintain. Although this may not be done by direct users, as this is a new system, electricians would need to maintain it easily and efficiently.

SUMMARY

The AIR System has been designed to engage children in more physical activity. It achieves this through providing teachers with an adaptable, time saving, and engaging system design. This allows teachers to incorporate physical activities that excite students, transforming their learning experience from sedentary to active. The implementation of the system can transform any classroom, creating an immersive and interactive environment. The endless possibilities for the system will encourage its continual use. This will lead to children seeing improvements with their learning success as well as their physical and mental health. This system will allow teachers to set children up for a successful start in life.

CONCLUSION

Poor physical activity in primary school children impacts their fundamental motor skills, social skills, and emotional wellbeing. As these students spend up to 30 hours a week in school, this is an ideal place to target children's physical engagement. This research found parents and teachers wished to see more time allocated for physical activity, but didn't want this to negatively affect childrens' academic performance. Therefore, there is a need for developing new programs and equipment that integrate movement with academic lessons. To meet this need, future design will contribute towards a shift in mindset that views physical activity as an important tool for improving academic success.

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11

APPENDIX

Interview Questions

1. ***Tell me a little about your experience and approaches in engaging children in physical activity at school?***

- What is your experience teaching fundamental motor skills to children?
- Have you seen children affected by their motor skill abilities?
- Have you implemented physical activities in the classroom?
- Does PE alone do enough to engage children in PA?

2. ***Tell me a little about your biggest challenges with engaging children (using the answers from the last question)***

- What types of activities do children tend to participate in at school
- What is your opinion on modifying the Australian curriculum to incorporate more physical activity during school time?
- What strategies or methods have you seen used to encourage children to participate in physical activity? How did the children respond? Were they successful?
- How would placing more emphasis on fundamental motor skill development within school impact students?

3. ***Imagine you have a magic wand; how would you go about solving some of the challenges you mentioned (from question two).***

- How could the children's participation in physical activity be improved?
- What is your opinion on and experience with the equipment available to schools to be used by students for physical activity participation?
- What direction would you like to see physical activity at school go in the future?

Interview Transcripts

Classroom Teacher - (Prep, One & Two)

Start: 6:30pm 05/05/2020 **Length:** 36:04

D: *Would you mind telling me a little bit about your experiences and approaches to engaging children in physical activity in school or in the classroom?*

C: When I first started teaching, I actually taught a preschool class. And basically, my day was split up into two parts. Basically, we had the outside time and we had the inside time. And then in the outside time, we used to set up an obstacle course, and also do a lot of gross motor activities. So, we would have things like catching balls, kicking balls, those mini soccer games, digging in the sandpit, a lot of climbing, and balancing and all those types of activities. So, that was an important part of our programme. And basically, the inside and the outside time were pretty well perfectly matched. So, of course on the inside time you'd have like all your fine motor activities, and basically educational things like numeracy and literacy. But during the outside time you would incorporate those academic things. But basically, we were touching on gross motor skills to set them up for, to like, basically to develop the balance coordination and all those sorts of skills. So, the emphasis was on that part.

And then, basically now, that prep has come into play, that preschools no longer exist as such, but a lot of the preps teachers are still incorporating a bit of that outside play, however, most schools though, have a greater push for their curriculum, and unfortunately, Maths, English, Science, Arts, History (HAS), have all sort of taken precedence over the gross motor activities. So, I feel like the skills that we valued when I was a preschool teacher have sort of basically slipped through and are now sort of at the bottom of the list.

We never had PE teachers actually doing lessons. When, when I was a preschool teacher in the early years that's in like the early 1990s. So, we do have a PE teacher now that actually does that. But we have to follow up on that. And sometimes I think due to circumstances and pressures with curriculum, we actually, that sort of comes last on our agenda, rather than, you know, ranking it up with all those other subjects and such. Though, we also didn't actually have a lunchtime play when we had the preschool. So, now of course we have lunchtime play and that's when they go on the playground and do all that. But we are not sort of, basically, targeting the skills. Now, it's sort of all free play and using their energy up in the lunch hours, and maybe encouraging them to play soccer or, you know, some of those games and catch ball or whatever. However, it's not targeted schoolwork, like it was when I had my gross motor sessions.

I do schedule gross motor sessions each week, and I do work on those skills, but it's only probably once a week, and it's not the same as what it used to be every day that the kids came to preschool. And that was why we had the five morning sessions, or five afternoon sessions a week or two days one day three days the other, so it was part time, but we still targeted those skills pretty, pretty regularly. So now I feel like it's sort of disappearing out of our curriculum it's sort of the last thing that you do. It's maybe a sort of affiliate activity, rather than an actual targeted activity, which I find a little bit, yeah, I've sort of feel a little bit upset about that because there's such an important asset to kids' development. But finding the time with the curriculum pressures now is just very difficult, so teachers don't tend to do that as often as they should, and I'm guilty of that as well.

D: Yeah, definitely. *Do you think the children themselves are affected, or how do you think that they're being affected by these changes, are you seeing any negative or positive changes from it?*

C: massive, massive, massive issues with gross motor skills with kids coming to school now, rather than 20 years ago. 20 years ago, a lot of the parents were getting out in the backyard, playing and kicking balls, developing catching skills, and also too just general participation in sport. So, most of the time when the kids were about three or four years of age, they would start playing hockey or football or soccer or tennis or something. Most kids were engaged in that. Now I feel like money is a big issue with parents. They are time poor, and therefore they're not actually getting a lot of outdoor play in the backyard with parents.

They're coming to school, a lot of students are coming to school with very limited gross motor ability and closing their eyes catching balls and dropping it, being scared of balls and reacting and won't even be able to catch it. Using basket catch, which is a really primitive, like it's more like a one or two year old type of the catching technique, except if you've got like an AFL football and you're taking a mark, but just a in general they're sort of clutching it to the chest instead of catching it in their hands. No positioning of their arms for doing a chest pass. Not being able to track the ball they can't move the hands closer to catch the ball, they just let it drop, I'm finding this out a lot more with lots of kids. The timing of like being able to catch. Being able to put the right foot forward in order to be able to strike a ball, deliver a chest pass the, you know, that's, that's one thing I'm finding extremely difficult. You have to go through the step by step process of, you know, whichever hand the stick or the ball or the racket is in, you need to put the other foot forward blah blah blah. Whereas that used to come quite naturally the kids.

Strength and coordination. There are some kids that are very active and they're still strong coordinated. But there's many, like skipping galloping any of those sort of older traditional type skills, they're sort of becoming a lost art really. Skipping with rope, again, when I first started teaching, lots of kids had skipping ropes in the backyard and be able to skip. Now, very few kids have a skipping rope, and being able to use it to develop that timing is important. So, I find it a little bit difficult to watch kids, because it's like we have ballgames for school sports days, and you're actually trying to teach them the skill of how to actually grab hold of a ball and catch it, so it's pretty tricky.

D: *Do you think that certain people who are more active group together or is that like social playground groupings that you've noticed, because some kids are struggling with catching a ball or?*

C: Massive, yeah. And it even starts with early years. For instance, kids lose patience with other kids. If they're capable of catching and throwing a ball, and there's another kid opposite them that they know is struggling being able to catch or throw the ball, they don't particularly want to be their partner. They don't want to pair up with them, and they find it very frustrating. So, therefore, that child is a little either…, you know you can tell just from the other kid's facial expressions or you know they might sigh, or they might not choose that particular kid, and that kid then is sort of ostracised. But as you move up the grade levels, the kids that are very capable with, sport always tend to be the most, not always, but often are the most popular kids. They're the ones leading the soccer games, the cricket, any of those sorts of activities… hockey, basketball. They are the ones that are sort of dominating the game, and they find, and I find that they have little patience for the kids that are still learning those skills. So therefore, a lot of those children will drop out. They don't want to play those particular games and they'll try and do something else.

So it's sort of hard as a staff member to watch those kids sitting on the sidelines and not participating fully, and then incorporating them back into that game, you've got to be able to teach other kids how to sort of basically develop the kid's confidence, so they need to be able to sort of not go hard on that kid that's, you know, missed the goal or can't hit it. But trying to be encouraging so that's sort of tricky to balance. Most often the kids that are not very sporty, or have low coordination, or haven't got the skills that they need, they will often tend to be on the outskirts of the game and not actually fully participate. So, which I find a little bit difficult.

D: *All right, so now tell me a little about your biggest challenges with how you have tried to engage kids in sport or teaching them gross motor skills?*

C: So, do you want from way back or from now?

D: you could give a comparison maybe, how it used to be and how it's changed and, like, what your opinion on the changes are maybe or how you seen a shift?

C: Back in the early 2000s, I teach at a small school, and basically, we would have had 50% at least of students in our school participating in sport outside of the school. I actually had six basketball teams from our small school, we've only got 60 kids so that was basically 35 kids that we had playing basketball. Now, I would probably say now we probably have 10% of our children playing outside of school sport on a Saturday or you know weekdays or whatever. That's a huge loss. Basically, kids would prefer to be at home basically on the iPads or the computers. They will get out at lunch times, but a lot of the kids you see will see be sitting underneath the trees and not actually involved in soccer games or playing on the playground. It's a lot of sedentary activity that they're doing now that I tend to find. Also, too, we used to have a lot of competition between our students actually in athletics events, and even cross country. Now, to encourage children to train for cross country or to actually train for a particular athletics event is pretty difficult. We sort of made it compulsory that all students had to go out before school between 8:30 and 9am, and actually participate in running to try and lead up to a cross country event, but a lot of the children would actually prefer to come later so they would miss out on that.

Again, when I came back to teaching after having my children. That was back in, about 99'. I actually had my class at 9 o'clock actually do running or gross motor activities. But now days there's no time to do that, like the curriculum takes priority, and you would never get every activity done, all the curriculum work that you wanted to do you would never get that finished if you went out for a runs an hour every morning. So, everything's been squashed back in and it's tricky because you've got a lot of things you've got to cover. So, it's not just academic things. There's a lot of social issues you've got to do like behaviour, you actually have to teach lessons in that, as well as health and all sorts of other activities as well. So, the curriculum is very jam packed and that reduces the time for a particular activity like running or gross motor or getting out playing sport.

We also used to have inter-school sport in our area. However, that's been reduced as well because a lot of the schools cannot finance buses. They can't afford the time that it takes the staff to travel. And also, there's not a willingness for parents to drive or coordinate those activities as well. So, inter school sport has basically been disappearing as well, so that's a real shame I find. It used to be the most popular thing you know, five weeks in term one and five weeks in term four. Now we haven't, like the last couple of years, it's very difficult to even to even table that in.

D: *Do you think that emphasising more gross motor skills within the curriculum, from an early age would increase the popularity of sport or do you think that technology and the interests of kids now have changed it?*

C: Well it is timetabled into our curriculum. But because we have a PE teacher, I think sometimes teachers sort of almost feel like it's their particular job to do that. And they've got so many other things to worry about that, they're trying to concentrate on everything else. And I feel that the PE teachers are left to do that gross motor physical development type of activity. I think we've got to make more of a difference with kids and try and encourage that. But again, 20 years ago we didn't have computers and iPads and technology really impacting on that. So that's sort of a whole other

curriculum area that's actually impacting on children's education. So, now, it's sort of just an extra thing and finding the time for that proper commitment to outdoor education or gross motor education, you know, and developing those skills. Just kids would prefer to sit on the iPad, most kids would prefer to sit on an iPad or computer, particularly as they get older, then actually go out, run around and do all of those things. If you gave Kids Choice, most of them would probably prefer the iPad, or the computer, rather than going outside and playing sports.

D: *In your classroom when you do the fundamental skills or have time for games, have you seen any in particular that work well when engaging kids or, what are your experience with your classroom programmes for gross motor skill development?*

C: Yeah actually last year we did yoga. A yoga teacher came in and actually did some of those stretches and balancing activities, so the kids really enjoyed that. That was for about an hour a week, and it only was about six lessons. But I think they've got a huge impact, of being able to relax, but also to have that mind and body control. So, I really enjoyed that. The other thing is that we did a lot of rotation work on one afternoon a week and we could concentrate it on strength, concentrate it on their ability to crawl, roll, do all those things, not like a somersault but like a log roll, crab walks, all those sort of things to build up their muscle tone and their strength. I saw a big difference in that. And of course, we did sort of all that at the beginning of this year. However, now with COVID it's sort of, it's all gone on hold. It will almost be going back to square one again.

Mini tramps are really good but even like monkey bars and things like that. As they get older, that Monkey Bar coordination is really good. I find that a really great thing for patterning. A lot of the kids that I have, that have had trouble with processing skills, I've actually had teacher aids go out and actually do monkey bars with them and that really helps with that. So, yeah, I do, and even like learning how to catch and pass a ball, like once you develop that skill, then you can incorporate them into games and they feel a little bit more confident with themselves and feel a little bit better about joining in with others.

But again, like even since COVID has happened, and we've only had minimal kids at our school, I've be taking them up on the tennis court and actually hitting balls. At the beginning of the first couple of days, hardly any of them could actually hit the ball. We didn't even have a net there but, trying to coordinate the racket and get that timing, they could do it. But after a week, by the end of the week they we're starting to time the ball a little bit and they were starting to get the hang of it. So, I think it's about encouraging children, and getting them involved, but I think it's sort of a teacher's job to try and teach kids how to be patient with other kids that aren't able to do the skill as well as they can. I think that's probably my biggest responsibility, is to actually keep encouraging kids that even when they fail, and I can't do a skill to break it down for them enough that they can actually learn it and become better at it. And not to give up.

I think that's the other key thing with kids at the moment. They're not that resilient. So, if they fall over, they get hurt, they just forget about it or walk away from it, they can't keep going with it. So, perseverance and resilience are two really major things that I think kids now are sort of lacking. Again, you know, in the past, probably 20 years ago, a kid would run fall over, get back up dust themselves off and keep going, now they are crying and need an icepack. And I'm not saying a major injury, they probably just got a tiny little scratch. But you have to do the incident form and all that sort of stuff. You have to write it in the first aid book because you've given them a band aid or a little piece of ice or they have a bruise.

I think that's another thing why teachers are very hesitant about gross motor skills, because there's a higher risk, and therefore, greater chance that a kid is going to get hurt. So, Like again when I started teaching you'd play soccer with the kids, we'd play softball with the kids, you never had a lot of the protective gear, you played hockey, you never wore the shin pads you just got out there and did it. And if the kid got a bruise, you'd explain it to the parents, but it wasn't a huge deal. Now, if you don't have the risk assessments filled in, all the necessary safety equipment, your head could be on the chopping block, there's less understanding of that. You've sort of almost got to wrap the kids in cotton wool. Again, they played full on tackle football on the playground. Now you're flat out playing touch Football, the rules have changed.

D: Yeah, that's true. *So, imagine you could fix everything with a magic wand so what would be your process, or how would you go about solving some of the challenges you mentioned like having more time to develop the skills and increasing participation, just general ideas?*

C: First of all, I think developing kids' resilience and persistence, they're crucial. Without those, you can't keep them practising skills. I think greater participation in group sport or team sport. But first of all, developing a kid's individual ability to, like, you know, kicking, for instance before they play soccer, catching a ball before they actually learn how to, you know, play, AUSTAG or whatever. Developing this skill, and then trying to integrate it into a game. And I know that that's what they are supposed to be doing in PE lessons. However, I think we need, as teachers, more time, less supervision kind of duties at lunch times, and more time that we can actually enjoy with kids, coaching them, and teaching them those skills. At the moment I think we're just caught up in that like supervising role, but not being able to actually get involved with the game and actually teach the skill because we're too busy scanning the playground, instead of actually encouraging kids and fostering kids' skills and be actively involved with the kids.

The planning takes huge amount of time. Planning our curriculum, assessment, reporting, it's just taking up bulk amounts of time that now we're sort of time poor. And that means that we don't have enough time to sort of get out and basically enjoy our job with the children. And that's been the one good thing about, which there's not very many good things, but COVID-19 with the reduced number of kids in our school, we could actually be out in the playground. We can actually do things with the kids like actually involving ourselves in the tennis game, actually going and playing soccer with the kids. But that's only because we've got 12 kids in the whole entire school at the moment. Once you've got the 65 back you can't do that anymore because you're too busy scanning

and making sure that kids are safe and playing in the right areas and doing the right thing. And, you know, listening out for behaviour and things like that. So, yeah. So that's sort of a bit of a shame really. Again, like I used to, when I first started in my teaching career, I would actually go out and play football and soccer and netball on the actual fields, and on the actual court and involve the kids and encourage that skill, and playing against kids, and learning how to be resilient, persistent, encouraging others, all of that sort of sportsmanship type sort of stuff. Whereas now I don't have the time. And I think our teaching workforce is just so much under pressure with curriculum that, like, yeah, that it goes to the one side, you can't do everything. Because by the time you contact parents and get permission and do all the risk assessments and everything like that. It's all gone, like it's not fun anymore.

D: *Do you think that schools have enough, equipment, as well?*

C: No. No. I think, again, also too, it depends on the school, and how it's stored. Yeah, it depends on budgeting and all of that type of stuff, but I don't believe schools are, particularly our small school, you know, a set a markers is pretty well our PE budget for the year. We've just purchased new high jump mats, it's a couple of thousand dollars, like that's really excessive on our budget. But if we don't have high jump mats, we can't even think about safely doing high jump training. And we're only doing the scissors, we're not doing flop. So, I don't think…, and storage is a massive problem, and I think it's a massive problem in every school. When you borrow the equipment out how do you it back. Balls, they just go flat or they're on roofs or they're out on the road or, you know, they're down the driveway so it's a loss of all of that sort of skill too.

D: *Is there a direction, you'd like to see physical activity taken in the future. In terms of during school, would you like to see more equipment or more curriculum changes or technology innovation or, what are some ideas that you've seen that have helped improve it or some personal ideas you have?*

C: Ah, yeah actually, um, the other day, I was watching a TV show, and there was a gym instructor. He was an ex-football player. And he actually had come up with the idea of actually, for every hour, like one hour, like if you might do it, you know, on the o'clock, like every hour of the day that you're at work or at school. You do one minute of exercise in your classroom. So, it could be one 30 second part of that is actually like a heart rate thing. So, it's jumping on the spot, running all the spot, skipping on the spot, doing something like that to boost your heart rate. And the other 30 seconds is a strength thing. So, it might be actually just sitting up, like just sitting on your chair and standing up, sitting down on the chair. Like sitting down, standing up all of that sort of thing. Or it could be lifting something, or sort of doing a plank position beside your desk, or something like that. Any of those sorts of activities, I thought, I'd really like to incorporate them. Because I think it would be something, and it's not going to take a huge amount of time and I think it would be really good for kids' concentration anyway.

I would love to see more inter school sport played or sport between grade levels or classes. I think that schools need to basically schedule it and have that scheduled in rather than just, you know, you've got to do an hour. Something like, you've got to play an hour of sport with your class. So, even if it was classes combining and one of the teachers, like you know, you might have an athletic younger or even athletic older person who's willing to sort of lead that activity and the other person being the support person to try and help encourage and do a lot of skill training. I think PE teachers need to start doing a little bit more in coordinating activities, between classes, and even schools. Again, like PE teachers might say they are but, there's a lot of PE teachers doing it, but there's a lot of PE teachers that aren't, but I think they are sort of a key, they've got the skill and the knowledge of various activities, and I think they could enhance that.

Yeah, and even more groups coming out to schools. Even if the government could sort of pay for them to come out because schools can't afford, a lot of schools can't afford it. You know, groups coming out, but there used to '*Life be in it'* groups that used to come out and do activities. Like, they had a great big earth ball and roll it around and the kids got active that way. That was really good, that really worked well, again that was a very long time ago. And more, more probably campaigns, you know, like, even if it was like inter school competitions, but not even kids going to different schools but you know it might be, how many hours of skipping could you do or, you know, they could they could do it at lunchtime so they have like a little competition like setting up like a target, and kids throwing at it, or you know what I mean, yeah, like some sort of little mini, mini things that would encourage kids to get active and fit and do more of that skill work.

D: *You also mentioned at one point about the safety implications. Do you think that there's a way that skills like monkey bars, for example could be safer for a kid?*

C: Well, at the moment, probably in the last 10 years we've had four kids fall off the monkey bars and break their wrist. So, we actually changed all the Softfall underneath, it's sand but we re-did all the sand and sort of did all that. We actually changed the height of the Monkey Bar, to try and help with that. But I think, yeah, I think it would be really beneficial to, you know, have equipment that is suitable for kids, and that are not an issue with safety. Our playgrounds are pretty good, there's nothing, because they've got to a safety audit every year and all that sort of that type of thing. Um, but it'd be great if you could sort of adjust things or...

And I know it's probably just a pie in the sky thing, but I think it'd be great if you could lower it down and raise up, you know, the monkey bars, or do a way that they can't get hurt, because the effects of that is pretty, pretty difficult, particularly if they've got a broken arm and they can't write, they can't shower properly. Someone's got to help them cut up their food and open packets and, yeah, the implications for that's pretty, pretty remote. Yeah. So, making equipment safer, that would be really good. Yeah.

D: That's great, thank you so much.

Classroom Teacher - (Grade Six & Seven)

Start: 8pm 07/05/2020 **Length:** 23:00

D*: So, the first question is just to tell me a little bit about your personal experience, and how you've approached engaging children in physical activity at school?*

T: All right, so I only really had experience with, you know, physical activity stuff until probably 2007, and probably for about 15 years before that. And, as a general classroom teacher and predominantly grades six and seven, so I like 11-12-year-olds. And that was kind of the era where you would always take your class out for something, for a game. So predominantly when I was in the classroom. That's how we would engage students in physical activity, you'd often take your whole class out for some sort of game, and we'd do that. It wasn't prescriptive, we'd do that with what we decided we'd want to do at the time. And that means whole class, we decided together, and would usually be something like, that sort of age group would always really like bin ball, or dodgeball, or anything like a softball sort of game but we'd change the rules up. So, it was always, sort of like, a negotiated thing, and it would I guess be a competitive thing, but a fun competitive thing. And everyone worked together more so, rather than focussing on who won the whole thing, if that makes sense?

D: Yeah

T: So, mostly that. But then also we always had interschool sport, like upper primary always played school sport on a Friday. So, a lot of those years, half of the day a week it was spent going to sport. So, mostly I would do something like softball, netball, something like that. And that again, when I was teaching, that was never really competitive that was more fun. So even if you've not played before, usually you'd have a positive experience with that. And it was kind of like a bit of a cultural thing, like everyone loved it. Well, you didn't hear too many people who didn't want to do it. It was kind of like a fun thing. It would be volleyball sometimes, or you know, whatever. And then also, I'd do dancing with my class, a fair whack. Well, when I say a fair whack, I mean we'd often do some sort of performance thing. Because usually there'd be some sort of concert that you'd have to do an item for, which usually involved a bit of dancing. But we'd sometimes just dance because, and usually, well I never had anybody who didn't participate, so...

D: that's good

T: Well, I guess I didn't interview them personally, but I never had complaints put it that way. And again, it's all about I guess culture and climate and stuff like that. And then, also, we'd play some games indoors, I guess I kind of like musical chairs. And like, you know, dead ants, squashed cockroach, huggee bear, but that actually is a bit of physical activity as well. Um, I think, oh yeah, and sometimes I would do weekends sport through the school, a couple of schools, but that was much more organised sport. Varying degrees of competitiveness, I guess, to participatory through to kids that age who were getting towards representative type stuff. And then I guess just athletics carnivals, like being involved with the lead up to athletics carnivals and on the day of athletics carnivals that sort of stuff. And then probably just lunchtime, like when you're on duty. Sometimes back then you'd organise some sort of game or just, that's about it...

D: Yeah, definitely. *Did you think that the kids when you're doing those like classroom activities and dancing and the musical chairs helped in the classroom, like getting them up and moving help them?*

T: Yes. Um, but all that stuff together sort of makes… because we want to feel like a team. Because once you feel like a team, and you don't worry too much about how you're looking in front of everybody else, then you're much more likely to participate and have fun in whatever. So, it goes across the board so physical activity, academic stuff. So, to me, and I guess this is what's going to come through with my interview is, I think it's all about self-esteem. So, if you need to do anything, and you don't feel safe and you haven't boosted yourself, you're not really going to want to do it as much. So, you have got to work really hard towards creating an atmosphere where people aren't going to tease other people, you're not going to feel really threatened. Yeah…

D: *yeah so that that basically leads on to my next question. What are your biggest challenges with how kids engage in that activity? So, what do you do to try and encourage them to participate?*

T: Yeah, so I guess my biggest thing is the self-esteem thing, because you always, well, I would always find people who are, I feel like, didn't think they were going to be good at it. And I didn't like seeing situations where they didn't feel comfortable or... I didn't want to perpetuate a situation, which was going to see out how they were perceiving themselves before they started if you know what I mean? So, I guess that's why the choice of activity and everything has to be something... and it's hard to explain. It's got to be something that the class decides, and then everybody's comfortable and you're mostly working together so you feel like you are contributing, but you feel like it's okay if you mess up too.

D: mm hmm

T: And fun, you'll more likely get a positive experience at the back of it, but I guess that takes a fair bit of work to get to that point. And that's what I think's the sort of secret ingredient, and that's where I mean I guess there's lots of potential for you and your project because, if somehow you can, I don't know, mentor or… is to do something with all that environment and mentorship and leadership and whatever, to make sure people can take risks, put themselves out on a limb, and there's a bit of a safety net, so that they're not taking too much of a risk where they're just going to fall.

D: *Yeah definitely. Do you think that, apart from motivating them through the self-esteem, have you ever had to help build skills as well, like gross motor or just teach them how to kick properly to help them with a game or?*

T: Yeah. Um, but see that's where probably I haven't, because I'm not a PE teacher, or I'm not a little kid teacher, so that's never been my forte. But it's certainly something that I'll do, if I feel like it will help. But I've got more of a, and I'm not talking I guess about sports coaching per say, I'm talking about the games and stuff, I'm more of a person who in that situation is more about, if you do something enough, you will naturally work out how to do it to a degree. Like, do you know what I mean? If you like something and you're willing to engage in it, then your skills will beef up to a certain point, and then you'll probably be ready for way more guidance. And I guess I'm talking about that 11-12 age bracket, because yeah, it's hard, if someone's not really into it, from the onset. It's hard to come across with a real, "oh no, this is how you do it, let's go step by step". I think it's probably easier for them to participate in an environment where they're not going to fail too much. And then you can build from there and push it in if you can, which is a completely different thing to if you're say a PE teacher, and teaching that explicit skill. But I guess that's different to like if I'm coaching sport, then yeah, then we'll definitely do, you know, drills and simulate games, small game type activities and stuff to specifically get certain skills.

D: Yeah, definitely. That's cool. *Do you think that um if there was modifications made to the Australian curriculum that would allow teachers, more time other than just like one afternoon a week, or there was more time dedicated to these activities that you're saying like the musical chairs and the dancing like it would help a lot, or?*

T: Yeah, see, and of course, I can't really answer this properly because I'm not across the academic curriculum properly, so I can't talk with any... but there is real magic to having the flexibility with it. I mean, it might already be in there, but there's real magic to having the time to negotiate stuff with the learners, and you know, and to go where they need at that particular time. Without it being explicitly set out for you all the time, there's got to be some playroom to guide people where you think they need to go. If that makes sense?

D: Definitely. Great. All right, so, final question. It's very broad. *So, if you had a magic wand, how would you go about solving some of the challenges that you've faced in any area of physical activity that you've had to do?*

T: Okay, I'd probably like to see a lot of diverse activity opportunities available for people, because not one size fits all, hey. And also, not the whole class necessarily, like when you did play games and stuff like that, it was you and the whole class so it's more of a one size fits all thing. And that limits what you're doing, and you don't have flexibility. So, if I had a magic wand, it would be that you could actually have equipment and space and facilities to target what people need. Which sometimes it's a group thing, sometimes it could be as simple as something more like yoga or… it doesn't have to always be a together thing. So, that would be super. Like that, you can actually have activities that would suit the needs of the people at the time, and I probably would like to see something like that. There are always situations where the people who didn't feel confident ended up either not participating, or say if it's an elimination thing, getting out first and then sitting out, and then watching all the people with the skills, who stay longer. It just seems to hit home to them, that they're not very good at it. So, eliminate all of that sort of stuff, so that everyone feels good and it's the right channel and the right skill set for everybody. Yeah, definitely… not too broad?

D: No, that's pretty good. *When you talk about the equipment and facilities what sort of things would you like to see, would you like to see more sports equipment or like you're saying targeted equipment or technology or any anything?*

T: Like all of the above

D: Yeah

T: So, I would sort of like, but then you can't do this, but you know the setup of the equipment is sometimes really difficult. So, the time that it's going to take to set up the equipment really dictates what you can do. So, there's that element. If somehow there can be developed ways or pieces of equipment that were easier to set up. I guess like you know, like pop up soccer goals and stuff that. I guess that's cool. But then also, I don't know maybe more... Maybe there's different equipment that we haven't thought about, like you know, when I was a kid and I used to love bouncing the ball against the wall and over the drainpipe. There are some things like that the kids would love to do that they probably don't have the right space or the right equipment for everybody to do it, do you know what I mean?

D: yeah

T: Like something that you could use that could be completely flexible, and I'm not really sure. Even like a volleyball net that comes up really easily, because you know volleyball is a great participatory kind of activity. Yeah, I like that.

D: Yeah, definitely. That's cool. All right let me see if there's anything else. *Oh, um, have you seen any other sort of techniques, used that you've really like taken inspiration from like yeah like new ways that have changed kind of how you view, physical activity?*

T: All right, give me that question again...?

D: Yeah, so anything that you've seen basically work really well. It's kind of going back to the engagement thing so like anything that you've seen that's worked really well. That's either like new or just work really well in like getting people to participate kind of thing?

T: Okay. Well, one of the philosophies, I thought was really, but this is not new, but probably started around 2000. It was always game based activities, unlike certain PE stuff where you would line up and then do a skill and then go to the end of the line, you always were playing sort of like a mini game to practice your skills, and because everybody was doing it at the same time, there's some sort of beauty in that, some sort of beauty in not sitting and watching other people. And there's something great about you doing it, because you're so consumed with doing it yourself that you're not so worried about how you're looking, who's watching you and who you can see. Do you know what I mean? And that takes, at that age especially, it just takes all the worry out of it, and lets you be really in the moment. And then I feel that's really powerful for like mental health and your self-esteem.

D: Yeah, definitely.

T: Yeah. So, anything like that. Anything where you are involved and it sort of, you're so engaged you get lost with it. So, I mean, I don't know... but then I guess that's what I'm saying it's different for everybody. So, maybe more stuff, some stuff more like yoga that's probably newer. Like more sort of... not your traditional necessarily sports or other sort of ideas. Sometimes skipping, I mean I know that nothing's new here but sometimes skipping's really great. It's just got to be really fun and want to make you do it again. But there's some sort of thing too, if you want to do it you keep doing it. If the right person's supporting you and guiding you then it'll become a habit and then you always want to do it. Yeah but sorry, I don't think I can think I can give you any new ways.

D: No, that's fine. Um. Thank you, you did answer all of the questions, you're just very succinct. It's good. Let me see if there's anything else I've missed…

T: If there's anything else you can always call back or...

D: yeah definitely. Oh, um, this is kind of in the engagement thing as well. *So, What are the type of activities you see children kind of doing now, like in school like how have you seen a shift from, like, how you like when you used to teach and like now when you're working in the school now?*

T: See, and that's where I don't think I can answer your question, because not, I'm never on duty in the playground. And so, I haven't really felt what it's like to be involved now but I know that they don't do it at school sport as much anymore. But apart from now I'm not sure because if I, if I do tell you I, I actually don't know for sure because I can't feel what it's like working in that environment so sorry.

D: No, that's fine. You you've given me great answers. Thank you.

T: I just think that it's so good for you just all around. You know, but then I, you know, that's what I guess I thought, always thought school was a vehicle to feel good about yourself. You can build your self-esteem and know you can take risks and... And I think physical activities are a really great way to develop all that.

D: Yeah, I agree. And I think, um, yeah from, like, what a lot of people are saying, like there's more time on like schoolwork and less time on physical and like that sort of idea like have you have you like I know you haven't got a lot of experience but from like where you're working, *do you feel like you've had an increase in academic focus and assessment like those sort of things?*

T: I'm hesitant to actually answer because I don't really know, but one thing I do, we do have is a very passionate PE teacher, so therefore there's a really strong component of PE etcetera still in our school like you know, she will still run cross country training before school, a couple of mornings a week and. So, perhaps, but it sort of seems to be compensated by her driving it.

Classroom Teachers (Le: Middle years grades 2-3; La: Disability support)

Start: 6pm 11/05/20 **Length:** 51:26

D: Um, so basically my first question is just to tell me a little bit about your experience and approaches in engaging children in physical activity in schools.

Le: Well we've just put it in an extra sort of playground, to entice the kids to balance on rocks, to engage with nature basically, there's swing bridges and there's a whole lot of less traditional sort of stuff. You know, there's a, what do you call it, like a conveyor belt where they can put rocks in, and they've got to a turn handle and the rocks, go along and fall off the edge and they're trying to engage them in different ways to interact with the environment, as well as this is all built around, there's little platforms and bridges and things, but it's all built around their normal playground with flying foxes, monkey bars and slides and, you know, that kind of thing.

La: We don't have, stuff like that at our school. So, we have, we've got like a playground that's designed for the preps and ones. So, it's got a lot of climbing and some balancing, but it's more fairly close to the ground sort of stuff, because obviously they are small. And then we have a slightly bigger playground for our twos and threes, but then our fours to sixes. They don't really have a playground as such, but it's kind of like a circuit down around the perimeter of the oval, so it's got all different equipment's. So, there's like a slide and like a monkey bar set up and like a platform rope hanging where they have to pull themselves up. Things like that, that go around but it's just one thing after another, so they kind of run it as a circuit, rather than actually have a full-on playground. But in terms of actually like engaging in the physical activity component, I guess, because I mainly work in Special Education so our kids need a lot of the gross motor stuff quite often, I mean all of the kids do, but often we've got kids who for whatever reason, whether it's to do with having cerebral palsy or motor planning issues or that sort of thing, like you need a lot of gross motor stuff. But they're often also the kids who are really reluctant to use the playground equipment for a myriad of reasons but often because it's either too crowded, or it's too busy, and they're not quite sure how to navigate, like the turn taking, or "I really just want to do this one component over and over again", and when there's lots of kids you can't always do that. Or for some of them, it's a real sensory issue, so "I don't like walking on grass", therefore I can't walk across an oval to get to the equipment.

So, it's predominantly that group who don't engage with it because of issues not actually related to the gross motor or the physical activity component. It's not that they don't want to actually do that part of it, it's everything else that's happening at the same time that they are reluctant to manage. And funnily enough, we've actually seen that with one of the kids in particular who never ever plays outside he only ever plays inside. And he's actually been at school for the last couple of weeks, and because we've had so few kids at school, he's been on the playground every day. And it's actually making a huge difference to his strength, and he's now able to hold his own bodyweight and do all these really cool things and he's really excited about it. But he's already said that when the other kids come back, he's not doing it anymore, he's done.

Le: Did we answer your question?

D: Yeah, definitely. Um, so, have you seen a lot of the classroom based physical activity used as well as the playgrounds?

La: The brain breaks kind of stuff?

D: Yeah, and anything yeah like that or under some people have done like dancing or play like little games and stuff like that.

La: Yeah. So, some of our teachers use that use like dances as brain breaks. They often use, I think it's called 'Go Noodle'. Or the other one that's good, is like clips of the 'Just Dance' video games, people have put those on YouTube and the kids usually really like them because they can actually copy. The whole point is that they can mimic, what's happening on the screen. I used to use those when I was a classroom teacher all the time. So…

Le: Yeah, and I think brain breaks are huge now. So, and apart from anything else the kids that just can't concentrate for the long-time span. And you know, we expect them to sit at their desks in prep now, and even in kindy, and I'm against all that. But that's how it is, that's the path they're following. So, it's essential that they get up and move. Unfortunately, because so many kids are sedentary with, you know, all sorts of devices at home, and they're not always going out kicking a ball hopping and skipping and jumping, we're getting a lot more students who are coming to school that don't have that basic, no one has taught them how to skip them. No one's encouraged them to hop and, you know, so there's still a lot of those skills that haven't developed. One of the big problems is core strength. You know there's students that they can't sit at their desk all day, they can't. They slump, and they don't like what I'm doing at the moment, they are slumping over the table. They just can't do it they haven't had the practice they haven't had strength.

La: Crossing the midline too. It's a huge problem. We were actually talking about it yesterday, because we had a friend's daughter here and she was watching the Wiggles. And commented we commented on, well you commented on it that while they do lots of actions and lots of kid friendly actions, they don't do a lot of crossing midline stuff. And that's something that we're seeing more and more kids can't do.

Le: So, they haven't established dominance. And unfortunately, that becomes like a battle because the teachers then need them to write and they need them to be doing this, so they're showing them pencil grips but, and I know where talking mostly about gross motion but this just as an example. You know, grip is quite developmental. you've got Parma grasp and then you hold the end of the pencil and finally get to the tripod, sort of thing. But teachers and parents are trying to get the kids to do the grip, but they haven't done all of the skills are the strength things before. And it's the same with gross motion, like how are you going to get core strength when you've, you know, you lay on the floor to play your games or you slump back in the chair or. So, there's a lot of that. We're seeing a lot of that at school now.

La: And they talk too about the fact you need to have the gross motor before you can do the fine motor. So, when we are seeing that kids have got huge fine motor deficits, we're also seeing that they have gross motor deficits which is contributing to fine minor issues that they've got.

Le: So that's getting back to what we watched the wiggles yesterday and we see all these little kids getting up in the audience and we have the little girl here doing it, but the wiggles, everything tends to be you know, they're helicoptering to the side. And that's what made me say to her you know, “why don’t they do something where they are crossing the midline and coordinating?” And also, just strength, so I mean that the perfect platform for doing that sort of stuff, encouraging kids to do it.

D: Um, also, a lot of teachers are saying that a lot of the time dedicated in the curriculum for Physical Activity is mainly PE time rather than set in your curriculum for gross motor activities. So basically, do you think that the PE lessons alone are enough to target these skills?

La: No, and I mean we know that now, because when you look at the research and the data on how much physical activities and stuff kids doing, one half hour PE lesson a week does not cut it. And I know that they work on the assumption that the kids are running around and playing at play time, but not all kids are doing that. And even with that factored in it's still not enough.

Le: Plus the research shows, we used to do a programme called 'brain gym', where they do that every morning and they'd get active and stuff... what about that, hang on, I just had a side thought, what about that friend of yours who decided to do physical activity?

La: Yeah for reading comprehension? I was going to talk about that.

Le: Oh, sorry. Okay, she's going to talk about that anyway. Perfect example to backup, the research and what the evidence is saying, sorry.

La: It's actually the teacher that I can also forwarded your stuff to, but she had been looking into some research and it was around, I don't remember the specifics of it but it was basically there were a few, like, gross motor skills that have actually been linked to improved reading comprehension in kids. And it's, it's like, we, weird stuff too, like it was, I think, one of them was to do with like balancing or... Yeah. And it was just things that you would not actually ordinarily link to reading comprehension. But anyway, she'd been looking at this research and showed it to me and we talked about it, and she basically has a prep one class. And she was like alright, "I'm actually going to test this theory", basically. So, what she did is, in the literacy rotations groups, she actually incorporated a gross motor rotation. And it was really hard for her to get that through, because there's a lot of people going, "well it's not really literacy group, and this is supposed to be" and "This is your literacy time and you're trying to turn it into an activity time"... Anyway, she pushed and pushed and use the research and said look, "this is what it's saying let's see". And her kids did so much better, they actually quite significantly, outperformed the other three classes. Even though we're doing the same reading programmes and theoretically the same activities, that was the main difference. And whether or not it was that, or whether or not it was just her kids happened to perform better, we would never know for sure. But the improvement was enough that she was like, "I'm always going to do this from now on, this is worth it to me". And the other thing that she found was that her kids were more focused in the other groups, because they'd actually had a movement break, so rather than just walking from point A to point B to get to the next activity, they actually were doing a whole bunch of activities. As a school we actually have a gross motor programme for our little kids, our preps and ones, which they do, I want to say it's like 15 minutes four or five mornings a week. I'm not totally sure on that, I can find out, but it's something along those lines. And they've basically incorporated that our PE teacher helps to develop it with our teachers, to basically, and essentially because we're finding with our kids that there gross motor was so poor, that we needed to do something. And they do that, and they all keep saying that it's still not enough. But it's kind of like, something is better than nothing, I suppose.

The kids generally just see it as fun, like they don't actually see it as, "oh this is something else we have to do". The kids who tire quickly, sometimes get sick of it because it's hard for them and it's draining and they're exhausted afterwards, but generally speaking, the kids look forward to doing it. And they try to put a bunch of different activities so there might be some throwing, some balancing, some riding of something like a scooter board or little bikes or whatever it is, so that the kids who maybe have deficits in one area, but are okay in others, can still feel like they're able to do it, like the whole thing is it really hard for them. So, yeah, that's kind of where we're at with that stuff. And I mean it's the same thing like with my kids that I work with, specifically, they have the

same issues with that. Like it's still loud, and it's still unpredictable and there's lots of people, and it's sensory overload. So, there's a lot of those issues that that they're still trying to deal with, which makes it difficult for them. But once it's built in as part of their routine, they generally tend to be a little bit more open to continuing with it I guess.

D: Definitely. So, I know you've mentioned a couple of physical activities that you've seen kids do, are there some that children tend to participate more in that you like that you've seen.

La: I don't necessarily know if it's activity as such. I think it tends to be when it's something that I do frequently, or it doesn't necessarily have to be familiar, but if they continue doing something, or it's done regularly enough, I tend to find that kids participate more. I certainly found that when I has a class and I did like dance brain breaks. We have all these rules around the process around when it was finished and what they needed to do and all of that so that it was contained for a classroom. But I was also had a rule that no one had to participate. But at the same time, the first thing we did, there were only about half a dozen kids that got up. Because the others, it was unfamiliar and they didn't want to be dancing in front of all the people and felt self-conscious about it and they didn't know if they could do it, it was hard, and all of those things. We kind of ended up with about five or six dances that they just really liked, like as a class, they just quite liked. And what I found was, as long as I just kept doing those few over time more and more kids started doing it. Until after a couple of months, I probably only had one or two kids who maybe only would do it half the time. Whereas everyone else was almost always, they'd jump up. But as soon as I introduced to them a new one that they didn't know, even if they really liked the song. The numbers have dropped off again, like you'd only have maybe half the class doing it. So, I think it's more to do with familiarity. And we find the same thing with the gross motor programming, you are introducing new activity, the kids are less likely to persist with it, and they give up really easily and they get sick of it and I say it's boring and all of that. But once it's being part of it quite regularly or it crops up, you know, whether it's every week or every couple of weeks, the same thing, they become more inclined to engage with it, it's a bit like, "Oh yeah, I can do this, I know what I have to do". So, I don't necessarily think its activity specific, I think it's to do with embedding it as part of their routine.

So, yeah so at the moment what we're doing is we're rotating our kids through the different playgrounds. Where the kids who are not usually allowed to play on the prep-one playground have been able to, and our prep ones who aren't usually able to play on the circuit have been and what we're finding is that when the, like, even when the big kids were at the prep one playground, they were more reluctant to play on it, even though they were easily able to do. It was just, it took them a little bit to be kind of like, "oh yeah we can totally do this". I think it becomes more to, if it's familiar I'm more to attempt it.

D: Yeah, definitely. With that, do you have to encourage kids to participate, are you finding, like when you said that when you're involving them in the dances, do you think you have to try and be positive and like all of that to engage them?

La: Yeah, I think some of it is lead by example. Some of it is, they see you doing it laughing at yourself, then it's kind of like, "oh okay, this is not so bad". Um, but also, I think it has to be positive. But if it's going to be really challenging, that you actually acknowledge that it's really challenging. Because saying really upbeat and positive, and oh it's going to be fine and we can do this easily, only goes so far because if a kid really can't do something, like if they really can't hop, for example, telling them that they can totally hop from one side to the other, is not actually going to make them be able to hop. Sometimes it's actually validating that it's really hard, or that it's tiring, or that, or that it's tricky. Often that acknowledgement is actually more effective than the false productivity. Because a kid knows what they can and can't do. So, if they know that these activities are going to be really hard for them, they can have 50 people telling them they can do it that easily, but they know it's hard. Whereas if someone says you know what, I know this is going to be really hard, how about we do, you know, we're going to try it twice, or I'm going to do it and then you're going to do it and then, you know, try it 400 different ways, but by no means that it's hard, I think that's more effective than it needing to be positive all the time.

Le: Plus, it makes you a safe place to fall too, because they know that they're going to get an honest response from you. So then when you both fall in a heap, it's okay to get up and do it again.

La: And then it becomes about, you know, that it was really good attempt that they have made, let's go again. And then if they improve on it, then it's not about improving against other people, this time is like well check it out, the first time this happened, and now you can do this, so you're already improving on it. And so sometimes it's the kids too, you actually explain what the skill is that they're working on why they need it, and they'll be far more interested in what they're doing because it makes sense. Whereas if you just say I want you to keep doing this activity over and over again and they don't know why, then it doesn't make any sense.
D: Yeah, definitely. And you said also the idea of you having to lead by example. So have you had to demonstrate or intervene and demonstrate the skills to the kids?

Le: Yeah, yes very scary idea, but lucky it's just kids. Recently I've had to demonstrate crab crab crawls and skipping, You know the hop step hop step. And on Friday, it was hop scotch we were doing. Hop, hop jump. Yeah, hop jump, it's not a good look. And usually they say, "good work", keep trying. Because usually I say "oh I'm not very good at this", and they go, "you said you didn't say that". So they're quite encouraging then. And I figure if I'm the biggest goofball, then, hey, they look so much better, and they're smart enough to know that my friend looks much better at doing that credit growth than you do. So, again, it's that just being, real being authentic, I guess.

La: We don't ever be deliberately really bad at something because the kids will immediately go that's what you're doing. But sometimes when you do do something quite easily, you immediately get a percentage of the kids who take that as a challenge and they want to beat you at it. And then you've got a percentage of the kids who are watching you do it, and immediately will go, "well I can't

do that". So then that's when you kind of go to them and go, "yeah well I couldn't do it at some stage either". So, it's about like, that the skills are developing, and that's why you tend to have a variety of activities, looking at a variety of skills so that you don't have a kid who is struggling at every single activity at any point, and so that they're all excelling at something different.

Le: I can't say I've ever demonstrated it really well. I can honestly tell you they've never looked at what I've done and gone I'll take that as a challenge, not in my living memories, maybe when I was in my 20s teaching, at least certainly not in my 50s, no.

D: Yeah, that's been one of the things I've seen like teachers say as well like they've had to like be goofballs and kind of engage the kids, so they don't feel intimidated by it so, that's really cool.

La: It's actually funny because you do stuff in front of kids that you would never ever in a million years do in front of a group of adults. And you do it in front of kids and it's not a big deal. And I think part of it is because, like they just so fascinated that you're doing this ridiculous thing that they get sucked into it. And even when they're laughing it's not malicious, they're just so amused that you thought you were good at this, and that's what it looks like, we can help you, they tend to go into helper mode.

Le: I get a lot of pats, even though we currently have social distancing. One little boy looked at me and he went, "that's okay". And I thought hey I went hop, hop, pick up a bit of chalk, jump, hop, jump. I thought I'd done alright.

La: They are pretty brutal.

D: Do you think that the potential for a modification of the Australian Curriculum to incorporate more physical activity is necessary during school time at the moment?

Le: Absolutely necessary.
La: I think we need to incorporate more play. If we just got rid of the desks and chairs from little kid's rooms that would be awesome.

Le: The whole thing needs and overhaul, but we'd need to play because we've got kids with issues where we're now showing you know doing social stories and trying to show them, you know how you interact with one another, things that kids should be working in Kindergarten, prep and year one. With time to play.

La: And it's stuff like turn taking and how to win and lose, and how you problem solve and how you work out if this kid's got something that I want I don't go up and deck them, because that doesn't, like that's not the most efficient way of dealing with it.

Le: And gross motor is exactly the same.

La: Yeah. We see such huge social difficulties and huge gross motor difficulties and huge fine motor difficulties. And the way that the curriculum is trying to deal with that is: "okay, well, we're going to make them read earlier and they have to be math geniuses by age six, and we just need them to be sitting at desks more, because that's the problem". Whereas, the flip is actually true, like if you took a chunk of the curriculum out and put in a heap of gross motor and fine motor and play, you'd actually end up with better results. The curriculum stuff would actually just come.

Le: The other thing I've thought off, many times. Because our prep in the campus of the rest of the school, people go down and do playground duty, you know in different parts of the school, but also in the prep. And the preps playground duty time is the outdoor play. And I find that fascinating because the teachers, that's when they have their break. So they often, even though their early childhood teachers, don't actually see their kids engaged in gross motor activity, because that's kind of seen as, "Oh yeah, we can send someone else to supervise", it's not really seen as a learning environment, or a place of development, it's just seen as "the kids are gone to have a play, someone else can supervise, when they, you know, burn all their energy they can come back. Whereas I think, because it's teachers doing duty, I think we should have different teachers going in doing Storytime for example, and doing different literacy things so that kids get different exposure to different people, and that the teacher should be out there encouraging social stuff but also the gross motor and obstacle courses, and noticing that, you know, Little Billy can't actually do this, which then explains why he can't sit at the desk and hold the pencil. Yeah.

La: The other thing we've had a lot of discussions around at school too is that in the school environment often the first line of punishment, I guess, is that kids lose their play, like they not allowed to play at lunchtime. And often, the kids who missed their play time, are the kids who need the play the most. And the reason that they end up missing their play time is because they're not sitting at their desk or they're not focused on an activity or whatever. And they're not doing it because their body needs to move. So they're moving, then they're in trouble, and then they're actually not allowed to move at the allocated movement time. So, then what happens is you end up with the same kids all the time, who are constantly missing their play, and they're actually the ones that need the play the most. But that's actually a really difficult mindset to shift. And we're having a lot of trouble with it at our school. We've got one of our prep one teacher who has said from the jump, "My kids are not going to miss their playtime". Like, they can miss other activities but they're not missing their playtime. Because she said, "this kid needs to run, and they need to run for a good 15

minutes". So, asking them to sit in the classroom because they miss out on their running time is actually not going to benefit them or me or anyone else. But there's been a huge pushback in that, "but that kid needs to be punished". So, it becomes a really difficult cycle to break out of, I think.

D: So, this section is more about like improvements. So, how could the children's participation in physical activity, be improved at school, either in the classroom or playground?

Le: More opportunities. I'd start the day with it. I'd start the day with it but also be, at 12 o'clock or whatever, I'd hit it again as well. As well as their play in their free play because you don't want it all to be structured, but you certainly, like the brain gym activities and the crawling and crossing midline stuff. You can play so many games that incorporate all of that and have a hell of a lot of fun, but the, you know, hitting a lot of markers and ticking a lot of boxes along the way. So, I think we need to do that a couple of times in the day.

La: Which actually just reminded me of a teacher who knew, and she had incorporated it into her geography lessons. And so they, the kids actually all had a map of Australia, and two or three times a day, she'd take the class out, and they had to do, like, they walked laps of the oval, but they had different things, they had to do. So it might be they had to walk a lap and then they had to gallop a lap and then they had to do something else or they had to climb something along the way or whatever. And then what they were doing is they tracked how many laps they did, and then they actually marked it on the map, and had to work out where that got to. So, after a week or so they might go, "Oh look, we've walked to from Gympie to Yeah, wherever". And they could actually track it and the idea was that in a year they wanted them to see how far around Australia they could get. It was actually really cool. And that was a really good way because they were then engaged in the geography, because they were interested in way that were trying to get to next, and what they knew about that place, but it also engages them in... It wasn't just, "oh we're doing activity for the sake of doing physical activity". So that certainly engaged that class.

D: That's awesome. So, what is your opinion on and what's your experience with the type of equipment that you've had available for you to teach, or for students to be able to participate well in physical activity?

La: Your better resources than we are.

Le: Yeah, well, as we were saying earlier, I think that's some of the playground equipment, that we have now put in, you know, timber logs and so many rocks, there's some artificial rocks, but there's a whole lot of rocks that we're sort of trying to move away from "oh don't balance on the rock, you might fall, to give it a go" and, and, basically build confidence and, yeah. So, the school is trying to look at risk quite differently, and there's an awful lot of equipment now to do the balancing and the core strength. We just need more access to it, and more time to do it.

La: We to our teachers about the meaning of risk. Kids have the right to take risks, but they also equally have the right to fail. And that's okay because part of that process is actually then building resilience. So now I need to attempt it differently or I need to try something different.

I think as far as the equipment goes; I wouldn't even be able to tell you how old the playgrounds are at our school but they're not new. So, I think part of it too sometimes is when a playground looks tired, and the paint is chipping off it and, or it's hot in the sun, and it's hot to touch or anything like that it, it's not enticing to the kids, like it just doesn't look interesting. And a lot of the equipment that kids love at like playgrounds, like swings or flying foxes, or like the big spider nets, like climbing things and those sorts of things, we don't have them in, in our schools. So, those activities that the kids, possibly really enjoy in other places, they can't do at school because we don't have the facilities for them. So, I think they tend to end up doing the same the same the same the same. Um, or they end up you know doing, going to play sand tag the other day, because I'm trying to make the playground a little bit more interesting, I think. So, I mean, it's not like you can replace playground on a regular basis, but I do think that how its presented and how it looks, makes a difference to have the kids interact with it.

Le: When they re-did ours, they put a whole lot of really established trees in the playground, like between the platforms and they have done a parkour course for the year twos as well, there is a whole lot of that sort of stuff. I'm just trying to think... what was the name, it starts with P? I can't think of it.

La: Oh yeah I can see the building.

Le: I don't know anyway, Sorry. I just thought it would be worth you to have a look at some of the things they do. A lot of timber and natural stuff.

D: That's cool.

Le: I'll try and think of it and I'll text you the name when I think of it.

D: Okay. That's great. Thank you.

La: I think probably, maybe, I don't know if it's to do with the age of the school, like I don't know if there was any state school being built if it would be different now I'm not sure, but I think there's definitely a reduced risk element involved and it's all about, "It needs to be super safe", and the kids have to use it really safely. And I mean we've got a rule, there's a tunnel thing that goes between two platforms and the kids are definitely not ever allowed to be on top of the tunnel. And most of the kids that use it would easily be able to climb across the tunnel, slide down off it or whatever, but they're not allowed to, like that that's the rules because it's too dangerous. So, when you're constantly telling a kid, "don't do that because it's too dangerous", "No, you need to hop down because it's too dangerous", "you've got to sit out because it's too dangerous", you're kind of teaching them that you can't do this. Whereas, teaching them that they can but they need to be safe about it, or they need to plan it out or be cautious with it, would actually be more valuable. In one of our playgrounds, we've got this climbing pole thing. It's a, I don't even know how to explain it, it's like, it looks like a netball hoop, except that the top of it has like these metal pieces that come down, so it makes, like the net is actually made of metal and it doesn't have an opening at the bottom. No one in our entire school knows what you're supposed to do with. All we know is that the kids are not allowed to climb it. But it's in the middle of a playground, we have no clue. You can't throw a ball into it because the ball doesn't come down, and you can't hang off it because it's too high off the ground. So nobody can tell you what this thing is for, and yet it's part of the kids playground and they are not allowed to climb it.

D: that's so weird.

La: Yeah and that's the kind of thing where it's like, it doesn't make any sense. And then we all wonder why the kids have gross motor difficulties and they're not risk takers and they don't know how to problem solve a particularly risky situation. "Well we told you couldn't do it, so that's why".

D: Yep. That's really interesting.

La: Yeah, it's bazaar!

D: Um, basically the last one is, imagine you have a magic wand, basically, and you could solve any problems that you faced with for physical activity in any element. What would you like to see in the future at school?

Le: Time. Time to do it. Time to explore, time to develop. Just time and the opportunity really, that's me. And then you could bop them on the head for gross motor and bop them on the head for core strength. You can hop, you can skip, you can gallop, you can play, you can climb, strengthen confidence will come with all of that then.

La: I would agree the time thing, and I would overhaul the curriculum entirely, but that's a whole separate issue. But I think too, I would also, mine would incorporate all kids having access to resources, but also too human resources. So people who are able to help them with that and who are willing to help them or willing to let them explore. Because often that the kids will have, you know, a lot of kids might have a trampoline, for example but that will be it. Or they might have a swing set, or they might have some sort of small climbing contraption, but, it's not that every key needs a full playground in their backyard, but I think every kid needs access to resources and access to opportunities that is safe within reason, but yeah, I mean, I know we've got lots of kids who start school, who the playground at school is the first playground they've ever seen. It's the first one, they've ever been on. So, by then, the skills that we would expect them to have already developed, they don't have because they've never had exposure to it. So I think that would be my thing that, you kind of level the playing field a little bit for everybody.

D: Definitely.
La: And I actually don't even think that's an economic thing. Like I don't think it's to do with how much money the family has necessarily. I think it's comes back to the time thing as well. I mean some of the kids who come from the wealthiest families, also don't have access to the equipment, not because of finances, but because they don't have the time, or no one will take them to go and do those things. So, and I think there's not enough hours in the school day to be able to do all of the gross motor and all of the physical activity that a kid should be able to do so.

Le: Oh, and I'd whack my wand and make all their shoes fall off too.

La: Yeah bare feet.

D: All right. What's the reason for bare feet, do you think they behave better or...?

La: Because there's actually some research that came out not so long ago and it was around the idea that toddlers up to, well actually kids up to the age of six that have 11 minutes or more a day of bare feet, outside in the environment, actually ended up with better executive function skills. So, that's like your planning, your breaking down of tasks, and your time management, and your organisational skills and all those sorts of things. And initially, when I first heard it I was like that seems like really obscure research, but it actually makes an awful lot of sense. Because when you see a kid, with no shoes on, and no socks on, and they're walking through a park or through a playground or on the beach, immediately, they're planning where the next foot, where the next step is going to be. Because if there's a sharp shell they don't want to stand on it.

Le: Or it's hot.

La: Yeah, so they start planning what their path is going to be far more than if they have shoes on. And shortly after I did that, I heard this at a PDO that, I actually borrowed my friend's toddler, and I tested that theory. So I let it run through my back yard with shoes on, and she was tearing around like a wild thing. And then I took her shoes off, and instantly how she was interacting with what she was walking on was totally different. So, on the concrete she was still really confident about moving fairly quickly. But I've the aggregate concrete with like the stones in it and stuff, she stopped, came to a screeching halt before she even got to it, because she didn't want to step on it with bare feet. Whereas with shoes running all over it, no problem. And same thing on the grass like straightaway, because some of the grass was squishy and some of it was spiky and some of it had like little nuts or berries or whatever on it, she was really careful. So, that was actually super cool to see in action. And for that reason, now I'm kind of like, okay, we need to take the kids shoes off, because it will actually improve so many skills for them. Um, and also, it's really good for like if they're climbing things and stuff too for them to be able to feel the bar and the grip, and how to position your foot. Whereas if you've got a shoe on and your shoes got no grip, well that's actually more dangerous than if you're in bare feet. And if you've got a shoe with lots of grip, then you're actually relying on a different part of your foot, depending on where the group is, as opposed to using toes or using the ball of your foot or your heel or whatever it might be...

Le: The arch…
La: Yeah

D: Yeah, definitely. So basically, final question. Um, what direction would you like to see the physical activity go in the future, would you like to see more like playgrounds, time, or just more?

La: Yeah, just put us down for more, for all of the above.

D: Yeah, definitely. "Everything".

La: That's a direct quote...

D: Yep. Sounds good. Don't worry, everyone I've had the response from is like just more time, more of everything, please just give us more.

La: 100 percent

Le: Are you getting any new material or is it just, "we need more, we want more”?

D: Um, I've had some talk about like technology and integrating that more, because a lot of people are saying, oh, like the people I've interviewed are saying that because kids are playing video games and stuff, they're not enticed into doing like a physical activity because there's no video or lights or colours and that sort of thing. So, would you would you guys agree with that or?

La: I'm in too minds about that. I noticed when I first brought the Wii out, there was a lot, it had a lot of positivity around it because it was getting kids up and moving. Well at least if they are playing video games, they're standing up to it, and they, even their arms and legs etc. But they actually also ended up with a hell of a lot of injuries, because it's, it's not authentic physical activity for a start. There's no feedback, other than the visual feedback of what's happening on the screen, and they tend to end up doing a lot of repetitive actions, which is why they ended up with injuries because it wasn't that they were doing a variety of physical activity, it was just they were doing the same movement endlessly for the purposes of the game. And I also come back to the idea of the, I know there was a lot of positive stuff around, there was some PE teacher, or some guy that just recently was doing morning PE lessons with the kids or whatever, for this whole COVID situation. But that still relies on the fact, like it relies on kids having access to that stuff. And there's lots of kids who don't, so...

Le: Most of your school

La: Yeah. So, I mean if kids don't have access to the internet or they don't have access to devices, I think you're probably going to find that, the people who are benefiting from programmes or games like that are probably the people who already have access to more options anyway. So, I don't necessarily know if it would make a huge positive impact. I certainly don't think it would make the positive impact that we would like it to make.

Le: And after all this online learning, I'm old fashioned, I think. No look, forget it, turn it off, put it away, we've done enough of that. Now let's get out into the real world.
La: I think that there comes a cost with the gaming side of it too. I mean, they're talking a lot about the attention. The fact that kids have the instant gratification needs now, and I think by trying to solve one problem, we're probably just palming the problem into a different area. I don't think it's actually solving anything.

School- Based Physiotherapist

Start: 9am 08/05/2020 **Length:** 30:58

D: So, basically, first off, this is just to kind of get an idea about how kids in primary school are participating in physical activity in general. So, um, would you like to tell me a little bit about your experiences and approaches to engaging children in physical activities and helping them with it?

N: Yes, so I am a school-based physio. So, I work pretty much exclusively with kids who have disabilities and are verified under their education adjustment programme. So, I don't do a lot, or in the past I haven't done a lot of work with whole schools or like whole classes. I do a little bit more of the intensive, supporting kids who need extra help with their schooling activities and that can be physical activity or that can be like anything else that they need to do at school. That being said, I have done some general programmes in the past were we target like a whole class, or we identify certain skills that maybe are lacking in a group of kids and they might be like, maybe five or six kids in a prep class for example, but I'll give a whole class a programme so that we're not singling out the kids who need extra help.

So, my go to way to get kids involved, there's two things that I like to do that. One is a bit more established and what I'm kind of exploring this year. So, the one that I'm used to doing that I've done for a few years is obstacle courses or gross motor circuits. And that's where I'll find out what the teacher is wanting help with. So, the teacher will generally identify the students that need support, and the teacher will say, you know, little Johnny can't jump, or Mary can't do climbing very well or something like that. And so, I'll develop a programme for the whole class, but I'll target those skills that the students that I'm referred is particularly struggling with and needs to know. And then it'll be like a... I like to recommend at least two or three times a week to get the kids moving, but at least once a week to do the programme. And it'll be like a combination of things, so I like to include something that's jumping, coordination, motor planning, balance, and strength. Trying to include something from all of those areas into each programme just to get like a well-rounded programme.

And that is kind of like an extra activity, so the teacher has to be fully on board because that's going to take time away from their like curriculum activities. So, that is something that I've done in the last few years. And that's the...

D: oh, sorry you just had poor connection. Sorry. Would you mind just repeating the last part, the internet's just been a bit funny, sorry about that.

N: Yeah sorry the internet might cut out, there's not great reception…

So, yeah, the teach us to be really flexible because it's taken away from the curriculum, and so that it's not throwing a huge spanner in the works with their daily routine. They will often times do a physical activity. So, they'll do it first thing in the morning to settle the kids before they start class. Or, they'll do it like coming back from lunch when the kids that already a little bit unsettled, and then they can use the programme to settle them in like a constructive way rather than just having them do free time or something. So that's the first thing. The second thing which is something that I'm exploring, especially this year with my OT colleagues is incorporating movement into the curriculum. And I've done that in the past but it's, I guess a little more structured, because we've got a bit of a clearer goal and focus so that is... the idea is,

D: sorry the internet's just cutting out again...

N: The idea of doing the movement is to get kids moving in class and embedding the activity you need to be doing. So, our best example of that is with the special school. So, they have a book of the week, and they read that book. So, we will. We're trying to sort of work out which... which activities are like the kind of... how do I explain this. So, you take the story, and you try and figure out how you can incorporate movement into the story. So that might be acting out the story it might be every time a certain word is mentioned you do an action. Or, just other ways to get kids up and moving throughout the stories. So, you're doing the curriculum activity, which is reading the book, but the kids aren't just sitting they are up and moving through that.

So, it's a little bit outside the box the way that I do physical activity, because I don't really. I don't particularly get involved in PE lessons and stuff like that, it's... I can do, and I have, my focus is more on those individual kids, but trying not to single them out. So, targeting individual needs, but through whole class programmes or whole group programmes like year levels.

D: Yeah, definitely. That's great. So you mentioned that you wanted to more like classroom based like physical activity with the storybook um Have you had any other, like, have you been able to kind of convince teachers to do that more or have you had to support it a lot?

N: Um, this... so that pandemic has actually being helpful in that because what I've been doing... I've only done one because we just have the one book of the week that I've managed to do it for so far and there's been some technical difficulties with the second one, but we did it this week and this week's book was ___ zoo. So, the teachers have scanned the book into a PowerPoint. And then,

I've said that I don't know at all, but it's basically the kid writes to the zoo and says: dear zoo, do you have this animal? And they send an email back to them. They do this back and forth... and then eventually they send the kid a dog.

So, I have created actions or to get them up and moving while they're reading the book. The teacher has put them in the PowerPoint to help with at home activities, because then obviously the teacher's not there to motivate and engage kids like they would normally do at school. So, this is really good even for me to kind of short how the OT and I can sort of incorporate our services into their activity.

So, let me explain what I actually do. So, you know, like the first animal in the book was an elephant. So, I videoed myself saying stuff like stomp like an elephant, and I did some big stomps. And then I put that video, like embedded it into the PowerPoint, so that when they play the PowerPoint they get to the slide of the elephant and my video plays say stomp like an elephant and the kids, ideally would stand up and stomp. And I did an action for each of the animals and have a video on each of those.

D: That's awesome
N: So that was kind of how we thought we'd get them moving at home we are hoping that when all the kids come back, the teachers will be open to doing similar stuff in person so rather than it being an awkward video of me, it'll just be the teacher standing in front of them saying everyone join in, let's do this, while they're reading the book. So that's been kind of good because the teaches didn't have to do anything. We did all the legwork; we took the videos we figured out which actions to do we saved it all and put it into the PowerPoint and the teachers just had to upload it to their one note. They were already uploading PowerPoint; they just did a second one. yes. so that allowed us to get our foot in the door.

D: okay, awesome

D: Yes, definitely. Have you, um, like how. Let me rephrase, um, tell me about some of your biggest challenges with how you've been doing this, like you mentioned, like the online technology aspect for this sort of programme, have there been like when you're running your regular programmes have you had a lot of challenges with that as well?

N: A challenge, well the biggest barrier is... there's a couple of things. So the first one is teachers not having the time or thinking that they don't have the time. I have a lot of past teachers that have just gone I'm too busy I can't do that. So even though I'm trying to say we don't have to extra you just have to change the curriculum activity to fit it all in they aren't at a point where they can kind of think reflectively about that sort of stuff and they are just under a lot of stress.

D: Sorry it cut out again, would you mind just repeating the last bit. Sorry.

N: I said that it's the time pressure, that's one big thing. Yeah, because they ___ a lot of the time I have to plan out these things and fit them in. Like the next role is that we start off with quite a lot of involvement, but the idea is to build capacity of teaching and empower them to carry on without us. So we give them the foundation skills and the ideas, but then they still have to do all of that critical thinking and figure out how to do it in their lessons which does take time. So that's the main things: time, stress, and even motivation of the teachers.

D: yeah

N: The other thing is just that we... We've got a new system for our therapist work in schools. But our services are still reliant on teachers requesting us. So, they're now able to request us for like class, and whole school things. But previously we were only allowed to be involved with a student with a disability. So, if a teacher was very interested in this sort of stuff but they didn't have anyone in their class who had a disability, who was verified under the EAP, then they wouldn't really be able to access our services.

So that's changing. But because there's been a change, we still have to work hard to make sure the teachers understand that they still need to request us to do whole school. But, our primary focus still our intensive support, or I guess they take a higher priority if we have a student with really complex needs. That would have to be addressed before we make like a class program. and the technical technological difficulties like I said. Me and the OT have both had problems, our phones just weren't connected to our laptops so we can't get the videos off. So that's also a problem.

D: Um, do you think that, like you mentioned the fundamental skills. Do you think that they should be engaged more, and do you think that there's like issues with convincing people that it's important, because of the stress and the time pressures on teachers and getting them to do it?

N: Definitely. So, I think... how can I organise my thoughts on this one... I think that there's so much pressure on proving academic success or demonstrating academic success from a very young age, that a lot of the time, the importance of fundamental movement skills are kind of pushed to the side, like people don't see the importance in those things and we always kind of get on our soapboxes about if a student can't sit with good posture comfortably, they're not going to be able to write well. Like you need to have a stable base from which to complete the activities. And then further to that, if the student can't write well, they're not going to be able to write you a brilliant, lovely essay or answer complex questions, because all of their thought is going into the motor action of

writing. And that's the same when they are sitting, if they can't sit well, all of their focus is going to maintaining their posture and they aren't going to work well. And it just it's like a whole chain of events.

And part of being ready to do those classroom-based activities require students who have done a lot of that play-based stuff in the younger years, and I think that's kind of ignored. And if they're not getting that play and exploration and experimenting with their bodies, finding what their physical limits are, understanding how they move and how to move in their environment, they're not going to be able to like hone those skills to then just sit still. So that's one kind of thing, I don't know if I explained that very well, that's one asset. And then the other is that we know that movement improves brain function and improves academic success. So, things like movement breaks. It's ridiculous to expect a child to sit and learn for two hours straight without moving and we know that including movement breaks, improving blood flow, connecting you know, different hemispheres of the brain by doing coordination movements, crossing the midline that sort of stuff, improves the academic performance. So, they will do better if they have the opportunity to do these different activities. And we are trying to use that as our selling point, but we still aren't getting a lot of uptake. And uptake from teachers, they're still not convinced because it's still taking time away. Even though you might get, you know, an hour's worth of work done in 45 minutes because they've done 15 minutes of movement, they will see that as early having done 45 minutes.

D: yeah, interesting

N: And then I also think that it's important to focus on those fundamental movement skills for just health and well-being and participation in sporting activities and things like that later in life so I'm not necessarily limited to kids with disability or without disability, but everyone can benefit from team sports and from engaging their friends in their physical playground and building their social relationships and things like that and it's often done through sport. So, building those fundamental movement skills that are then able to be translated and used in recreational activities is really important.

D: Definitely. So, the last question I have is just a very broad one. So just imagine you have a magic wand... So, how would you go about solving some of the challenges you've mentioned, like if you could fix anything thing?

N: If I could fix anything.... with real magic?

D: Yeah.

N: So, I think we need a shift in the focus of the education system. Actually, which is a very broad and wild claim to make. I've got to say I don't have a lot of knowledge on the system to be able to say let's do something specific. I think if we refocus the system to have a better focus on health and well-being and moving for the sake of learning rather than ____. There would be more room in the school day to do these activities that have so many benefits, like these movement activities that have so many benefit to kids, and helps them with all the things I mentioned before, like their concentration, their academic performance, social skills, friendships, all that sort of stuff. So, if we could shift the thinking of the system, change the system so that our focus is different, and teachers have more flexibility and freedom to do these things that matter, not that the other stuff doesn't. But if there was more room for them to focus in on these things I would wave my wand at that.

D: Definitely, Yeah. That's a good answer. Um, do you think that your school has enough equipment for you and like you're able to do everything well?

N: yeah that's another one. Yeah, that's another good point you've raised. If I have the equipment available that I needed, whenever we need it. To buy anything we needed. So even things like... at our school doesn't even have ramped down to the oval, like there is no path. So, getting kids in wheelchairs down there is really difficult. It either means that stuff are out pushing kids or kids are missing out. That's not good enough to me. So, yeah and that's specialist equivalent for kids with disabilities in particular.

And it'd great to have all new stuff and nice, you know, shiny cricket bats and bowls and nets and all that sort of stuff, like that will be brilliant. But, if we could buy anything, we needed to help kids with disabilities again, that doesn't have to be sporting either, it could be specialised thing so that they could use their arms more easily. Walkers and that so they can get moving if they can't walk without it, and they can participate in some activities in that way. So yeah, the funding and equipment around those things, improve it, especially when you have anything that helps with a disability, price tag is up exponentially. It's crazy. Specialist equipment, definitely, we would love that.

D: Yeah definitely. Is there a direction, you would like to see physical activity go in the future at schools like would you like more class-based activities or just all around more encouragement of the physical activities in general in schools, like you're saying with the curriculum changes?

N: I would like a combination of both of them. I will probably choose ___ to learn. And I'm trying to help shift that thinking change that, where I can. But I think, at a level, like in primary school, high school, special school, if we try to shift the thinking, and using movement as a tool, yeah. So...

D: sorry it's I'm just playing up again, would you mind repeating the last bit. sorry.

N: Hey, can you hear me now.

D: Yeah. Sorry for that.

N: I've just gone outside so hopefully the connection is better here. Okay, um, what was I saying,

D: um, you're saying... I think something about yeah, the shifting.

N: Yeah about sitting down yeah. So that, um, kids aren't just assuming the lesson has to be sitting down, listening to teacher or looking at the whiteboard. Have that, have the ability to plan lessons that aren't sedentary activities, and to encourage movement more in other areas of life as well. So, I think school has such a big role in shaping kids' habits and values and things like that. If we can sort of use the platform of school to encourage kids to keep moving outside of school as well. So, it's a little bit of that like practice will you reach because I see a lot of like even Health and Physical Education lessons where they are talking about keeping fit and healthy, and they are sitting down kids in the classroom. Get the kids moving demonstrate it. And, you know, I think that shifting that thinking, would be really good as well. Sorry, I think we went off on a tangent from your question.

D: No, that's great. Thank you. Um, I think you've answered all my questions. Um, if I find anything like because the audio was a bit funny if I find anything that doesn't quite make sense because it cut out, would you mind if I like to confirm with an email.

N: Yes, for sure

D: Awesome, thank you. You nailed it. Thanks so much.

N: Yeah, I hope it's all helpful because it's a little bit of a weird perspective, maybe.

D: No, it's it aligns well with like the other interviews I've done so it's good. Yeah, it's been very insightful.

Physical Education Teacher

Start: *3:00pm 06/05/20* ***Length:*** *32:48*

D: *So, the first question is to just tell me a little bit about your experience and approaches to engaging children in physical activity and physical education in schools.*

L: Okay, so I have now been teaching HPE, physical education and health for 30 years. And, the curriculum has changed so many times, that each time it changes they try to reinvent the wheel, rather than allowing the process of education in physical work to develop. So, I find that even though we have things that are set in, that everything just sort of comes under a new label, like, just for example we did something called daily fitness. Do you remember all that?

D: Yeah, I do.

L: Well, Daily fitness is now gone by the board. But they expect the teachers now to take the kids and give them physical breaks for 15 minutes. Get them out of their chairs and go and do an exercise or get them out and say run to the fence and back. So that now is the day the fitness that I used to do with the kids.

D: Okay

L: Yeah, so there's been so many changes, and I'm afraid I'm not a really good advocate for the new curriculum, because they've changed it so much that they've made it too advanced for the kids that we've got now due to the fact that our kids aren't out basically doing stuff, there's too much sitting on computers. Which in the pandemic, they're doing so much more often because it's all online. So, you've got to sit down at a computer to do the work. And I'm finding that when I have kids coming to my classes now, I usually have two groups. I have the groups that are “Yay, love PE”, or the other group that goes, “I'm not going outside, I could sweat”.

Yeah, so I've got a sort of thing where I've got to try and give these kids, an approach, where I can take them in, and bring them in with something that is computerised to get those kids that are not seeing, you know the big flashing lights and jazzy stuff popping up on the screen. Plus, then get them enticed to do the physical stuff that I need them to do as well. So, I have to show lots of enthusiasm and say, right, and I do a lot of joking around with the computer. I go, “ah you know what I'm like, she is not really good at these computers”. They can help me out, and I usually get one of the kids that hate PE, come up and go, “well you got to do this”, and you know they get me rolling. And then they get the enthusiasm because they've showed me how to do something. And then from there we take it in, and we look at all the different aspects of the PE. Like to the preppies. We do a lot of gross motor or conceptual motor where we do a lot of cross-legged walking, heel to toe walking, balancing, hopping, skipping, jumping. And usually I have three quarters of the class, that can't do any of it.

D: oh wow

L: But do I have those kids that have always wanted to be outside to get on the bikes go for a ride, get a ball out and bounce the ball. I have those kids that go, ‘oh this is so easy’, and off they go. So, I have to try and have activities that get the ones that don’t want to do it more enthusiastic about doing it, but also maintain those kids that already can do it, step up and be role models to help the others. And the problem is when you first get a class, like this year I started with this preppy class. The first question I asked them, “who has a ball at home?”. And you see the hands that go up and you go right, they are my kids, my active ones, right, so those are my kids that sit in front of the television and watch television. And you can basically look at those kids, and they divide themselves so easily. Like this year in one prep class. I had 24 Children, and out of the 24 children, I had 4 that had all at home.

D: Wow, that’s amazing, that’s a bit scary.

L: Yeah. And when we started doing things like we do, heel, toe, heel to toe walking which is just putting a heel to toe and then following on. I had the four. Brilliant. Not a problem. I had the others that didn't know where their heel was, didn't know how to put a toe to it, they'd leave a gap, that couldn't hold it balance. It was amazing. So, I spent nearly two weeks on working to get the actual patterning of movement with those preppies. Now that's something that should just come naturally, and it should be done at kindy and see here's the problem. A lot of them don't go to kindergarten, a lot of them go to play centres. And when they're at a play centre, they're not doing things like that. They'll set up something outside and say go and play, that's free play outside.

You know, you've got such a mismatch of abilities when they come in and you've got to try and get them enthused, and then show them and then they start getting frustrated. You've got to go, "Okay. Okay, let's try it again". And then you've got to try and build that thing called resilience that children today don't seem to have, because they want to be able to do everything first go the right way. And you would know most children can't do that. Everyone has to take those little baby steps and learn. And then I've got to be giving all that extra praise to that child that I can see that's getting frustrated, and I've got to go, "righto, let's try it again. Let's do one step", and you know, give them added encouragement and feedback. "Okay, you need to put that heal right near that big toe, find that big toe, touch that big toe", you know, things like that. And it's just constant positive.

And then once I've got the activity, then you've got to make a fun activity that they keep practising. So, by playing a little game. And when you're doing these things with the preppies, you've got to do 5-10 minutes of an activity, and then you've got to change because they can't concentrate for anything longer than 5-10 minutes and then they're off with the fairies and you got to bring them back and start again. And everything is simple steps, do this little step and then we'll build on this step. The hardest thing is trying to keep yourself, myself, I have to have the patience. I've got to be, even though I'm going, "Oh my god, how come they can't get it", to be patient. And then sometimes I'll go to, like when a person doesn't know where their heel is, going to, you know, touch the heel and say, "right, this is your heel remember, we're working on heel to toe". And I have to touch the heel, and then touch the big toe, so they know what the movement is.

It's a lot of that. And the problem is, I think, I'm noticing that the children are not developing, from when I first started teaching to when they now there is such big a gap, because we haven't got the kids outside running around, climbing trees, falling over in mud, getting dirty, you know that sort of stuff. But the main thing for me to try and get them is to try and be enthusiastic. Give them the encouragement. The, we can do this, and constant praise, because that seems to be the only way. And sometimes, like I don't like to say this, but I do have to bribe kids. If you can do this once, I'll let you have a little break.

Does that sort of help you?

D: Yeah, definitely. You kind of answered 2 my questions, because the next one was like what your biggest challenges are so yeah. So, you talked about how kids are struggling with it so like you have to encourage them more so no that's very helpful. Um, have you... *do you think that the kids who aren't participating in the physical activities, either in your education classes or during school in general are suffering if they can't do like the activities?*

L: Yeah, they are, because a lot of the ability to have a go with stuff and get that motivation to do stuff leads on to other, other things. Yeah. Like, I've got to get really into the movement, and at my school I have been trying to get the teachers to do that 15 minutes prior to starting school. Our school has now decided that at 8:45 we get up and each class has to do the movement to get the brain ready for schoolwork. So, they do, and this is the advantage of being in a classroom, the teachers can use their whiteboards and they can throw a song on that has got exercise and movement to it, and all the kids get in and they do that movement. They don't they're doing PE, they don't know they're being physical, they just think they're moving to music.

And we've had to introduce that a lot, because we've had a lot of kids that come to school basically sit down do their schoolwork, sit down at lunchtime, and the grades have been dropping because they're not engaged, they don't seem to be. They look at a subject and they go, "ahh, I can't do that". And we're finding that with a lot of kids now. Also, if there's not those big flashing lights from all

the video games they don't engage. They need that sort of thing to get them up and going. So, we've decided that the physical part is to get up and go. Do you remember back at school, you guys before you went into school, you'd get skipping ropes out, and you'd all have to be teaching each other skipping and getting all the little kids going as well. And even though all you guys knew it was physical, because you didn't have computer games coming out of your ears all the time, but that got you guys going, ready to go into class to actually start to learn. So, you've got your brain switched on, ready to go.

So now we've got all these names that we've got for our brain, that our brain is in what we call ‘Calm’, ready for education, and the ‘Wild’ brain’, and of course the wild brain is when the kids are frustrated upset because they're not getting the ideas. So, then you've got to change what you're doing, give them something physical to get the brain calmed and moving, and then bring them back in and started again. So, that's how my schools are now changing things, because most kids don't go out and run around. Most kids now will go to the library and they'll sit in the library, or they'll go and find a seat, and they'll just sit. So, we've got to start to get more kids up and being active.

Okay. Something else that I know I struggle with; is the amount of time I get to have with the kids like at my school. I've got 21 classes that I’ve got to teach every week. Now my preppies, ones, twos, threes, and fours, I get them for an hour a week. That's one hour, that's it. And my fives and sixes, I have them for 30 minutes. And in that time, for example the five/sixes, I've got 30 minutes to get them excited about playing a game of something. And I've got to teach them the skill, keep them enthused about learning those skills and start playing little modified games to build up to a modified game, because, now I don't play any real games. Like, I can't go out and play a soccer game like they would play on a Saturday, can't do it, because the kids don't have the skills. I've got kids that actually play soccer on Saturday, who, like just... And you can see the difference. Like I can say right. And I've had to now change, and I've said, “right, you guys that are playing soccer, you have to do ball feeding, you have to feed the ball, look for the pass”.

And then I have to also, I now, when I'm giving the feedback, I have to say right at the moment you're sitting on a C standard. The C standard means you can do this, this, this, and this. But, if you want to jump up to a B, you need to show me this, this, and this. Now I've got 30 minutes. And I have 28 grade fives in a class. So, I get to spend like two minutes with them. And I've got a maximum of eight weeks to get something taught, because then I've got to have two weeks of assessment. And in that two weeks of assessment, I've got to video those kids showing me because I've also got to have my backup to show I've given this child an A because..., and I have to be able to show that on the screen, that this child has an A because they have demonstrated.... This child is B because that child show this, this. This is my C student. So, in those two weeks of assessment. And so, the eight weeks of giving them feedback, not every lesson, but trying to give them feedback when it comes to the video, I'm going to hopefully have that standard where I've got an A, B, C, D. Now I even have to give out an E.

D: that’s so stressful.

L: Yeah. And now, now that telling me on go to go to moderation. I’m going to have my computer with my little bits of this is my A’s, B’s and C’s for all of my different grades, from prep right through to grade six.

D: Wow, that’s, that’s insane.

L: I started doing it, because my school hasn't bought me an iPad to use, I use my home iPad, which is a big no, no. And because my iPad is set up to go to iCloud, the school, when I went to download it all to go back onto my school laptop, which is where I've got to store everything. Because it’s gone into iCloud, I now cannot get it.

D: oh no.

L: Yeah, so I've got a somehow get it downloaded onto someone's computer that is also with an iCloud account so that I can download it onto a computer, and put it on a stick, then take it in and redo it all on. Meanwhile, I have, how many classes, 21 of them.

D: Oh No! You wouldn't be doing that again.

L: And when the IT guy just said to find a computer, I said, "do you know how hard that is?" And he said, "haven't you got an apple at home?" and I said, yeah but because I've got, I bought a new iPad just naturally assuming that, just naturally assuming that's one thing they tell in teaching don't assume, I just assumed that I could use it, and it would download to my laptop at school, of course no. And of course, Apple, the school doesn't have any Apple computers. So, it's all sitting up in that beautiful place called iCloud.

D: I hope you can fix it soon.

L: But anyway, these are the sort of challenges, you have, and you sort have got to solve somehow.

D: Yeah, definitely.

L: Okay. So, does that help?

D: Yeah, I just have one more question just to round it out. *So basically, to summarise everything, if you had a magic wand basically and could fix, I guess the the abilities or the system surrounding physical education and activities for kids in primary school, what would you want to change or see improved?*

L: Okay. So, I'd like to see students be able to access equipment. Like, for example, have a ball at home. Every child has a ball, has time where whatever they can do at school... and that's the other thing I'd like to see that I was able to see the children more times. So instead of like one hour a week, maybe I could have, like, for example, at my school, I would need 2 PE teachers or 3 PE teachers, where one PE teachers did the preps and ones, another one did two, three and fours, and another one did the fives and sixes. And that every day they would be having a bit of PE. They would be doing an activity every day, so they could build and become more active. Because if you're going to be active during your primary school years, you're going to continue on, because you'll get that idea of, "I've got to go out and do...". It'll just become second nature. Get out and have a go at doing something different.

D: yeah

L: I think that would be lovely, it's never going to happen but, you know. But the other thing is to have the parents understand that if physical is working, it helps with the mental. So, if you're out there with your child, like, when I practice bouncing the ball, I'll ask the teachers, you know, "what are you doing in maths"? Oh, they need to practice their counting in twos. So, when we are bouncing the ball, for example, we count in twos, and everyone bounces and counts, and we, you know, things like that. And all I need is one ball. They can kick it, they can bounce it, they can pass it, they can practice their catching, and that way they, you know, they're out there, they're having a go at something. That'd be nice.

D: Yeah, definitely. *Do you think, the schools provide enough equipment for kids to be able to, participate in the bouncing of the ball or like well jumping and hopping etc?*

L: Yeah, well I know at my school. And, and I can only talk for myself. I've got a boss that gives me a generous budget. So, I have enough equipment that if I'm doing an activity that a child needs one ball, every child has got a ball. And we've been lucky enough, we've stopped kids going to the sport shed to borrow. What we've done instead is we've put equipment in classrooms, every classroom has access to different size balls. And I put the footballs in there even though my principal has said to me, you need to take the footballs out because the preppies and ones don't need footballs. But I want them to be out there having a kick with a different ball. We put hula hoops in there. They can, because it's amazing how many kids can't roll a hula hoop. They can't... they don't

know how to put a hula hoop around the waist and have a go at it. Now, I thought that was just a natural thing. I had to do a lesson with hula hoops to show them how to use them, and different things we could use them for. I was amazed how many kids couldn't use a hula hoop. It was incredible. Skipping rope. How many kids don't know how turn a skipping rope, don't know how to do, like at the moment. My grade twos are working on skipping patterns. I got so many, and it's not just boys. Normally, you know, it's boys that aren't good with a skipping rope. I've got so many girls that can't use a skipping rope. So, you know, things like that.

So, I know our school is providing a lot of that to get kids more... and I've tried to give the teachers different hand balls. So, I've got my grade fives and sixes, now that we've set up a handball court, and we've got different... so, during one lunch hour, the grade sixers get to use it and the grade fives have to use a different area. And then we swap it over, because handball is such a big thing that kids want to play handball, even though they make up all these imaginary rules. I've never known that a ball can roll along the ground and they can hit it, and I go that's not handball. Anyway, I've always had this discussion with my grade sixes, and I teach them the proper hand ball rules.

D: Yeah so you can actually hit the ball with your hand

L: Yeah. Things like that are just... and hopefully when they've had this constant going out and doing stuff that they're going to keep doing it. And they're not going to, they're going to be the kids, now don't get me wrong there will always be children that go, “don't like it”. Like I had a little preppie tell me, “I don't want to do anymore”. And I said why. He said, “I've got this wet stuff on my face; I don't like the feeling”.

That's perspiration, that's sweat, that's Good for you. “No, it doesn't feel good. I don't like it. I need to sit down”. I said no, let's keep going. Let's run another little bit, and then we'll get a drink, and we'll sit down. And all he was doing was jogging, and he jogged to a spot and would bounce a ball three times, jog to a new spot, bounce the ball. So, he had to go through a circuit of colours, like he had been red hoops. So, every time he finished at the red hoop he had to run to another red hoop and bounce a ball three times. That's all we were doing, and he was sweating. And when he told me, “no I don't like this stuff on my face”, and I'm thinking what's on your face, the moisture? That's called sweat and that's good for you.

So, I want to see that children out there doing, rather than sitting in front of the screen, playing with those PlayStations. I know every child needs some downtime. I agree with the downtime. I just don't agree that it should be every afternoon, when you could get out and just go for a walk. It's like, I tell the kids, have you got to pet? get up go for a walk with your pet. If you've got a bike, get on your bike. Take your bike for a ride. Get out in the backyard. Throw a ball, see if someone will practice catching with you.

That would be lovely if we could get that good stuff happening. And the only way I can get that stuff happening is hopefully if I'm encouraging the children at school, to do it during the lunch break. And then they go home... I started writing things in newsletters. Every time we have a fortnightly newsletter, so I have to do a little information for the parents. “So, in prep this week, for the next fortnight, we are doing these things, can you have a go at practising with your child”. So, I'm encouraging the parents, and encouraging children. And I always go, “guys homework”, you've got to practice this... I want to see how many of you can do it next week. Because I only see them once a week.

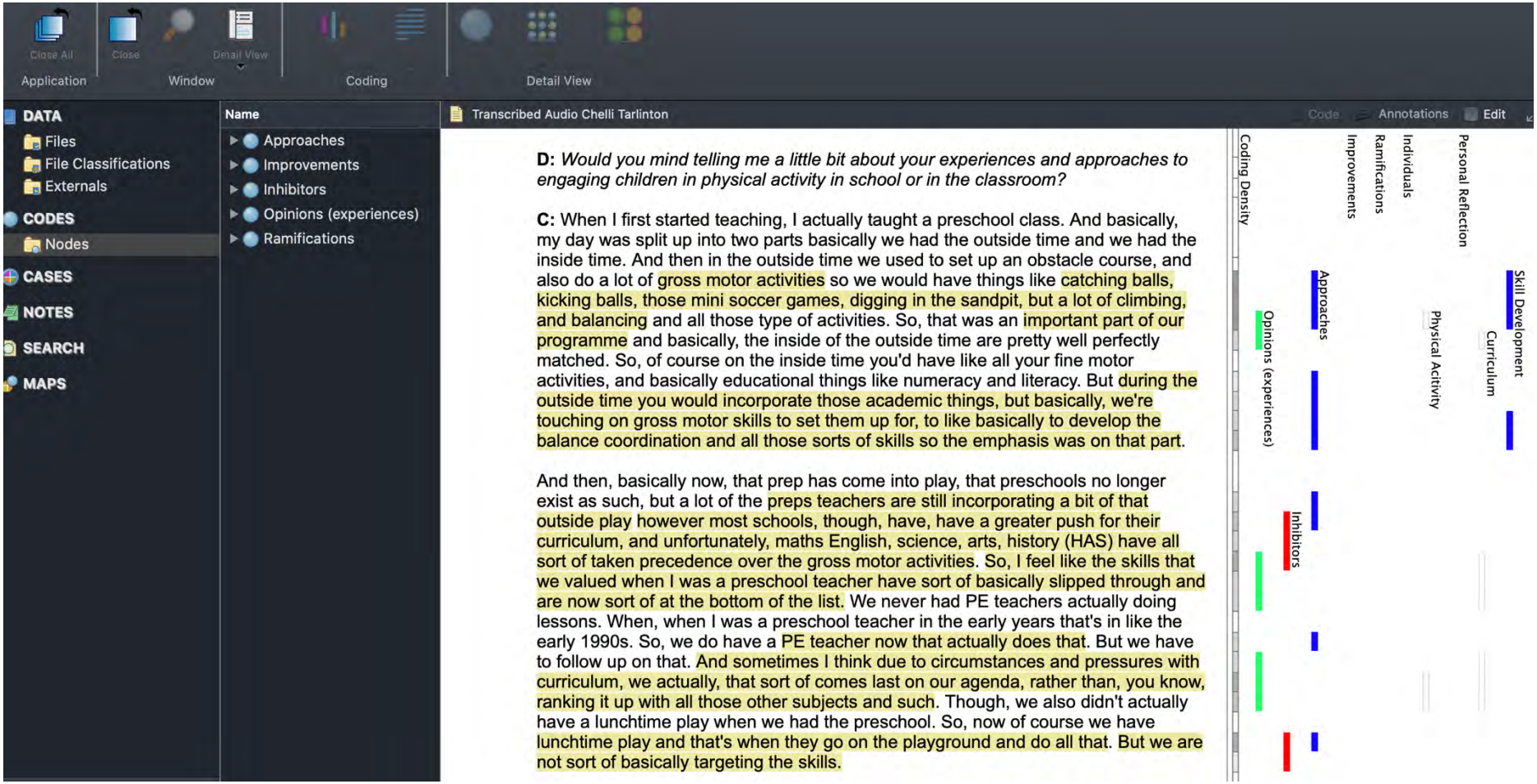
So, a magic wand, 3 PE teachers at a school. That way, every child would get more time. It would be lovely to make class sizes smaller, which will never happen, but smaller sizes so the schools that don't have big budgets like mine, can afford to have that amount of equipment to use, and they have got to have the equipment.

D: Thank you so much. You've been very helpful.

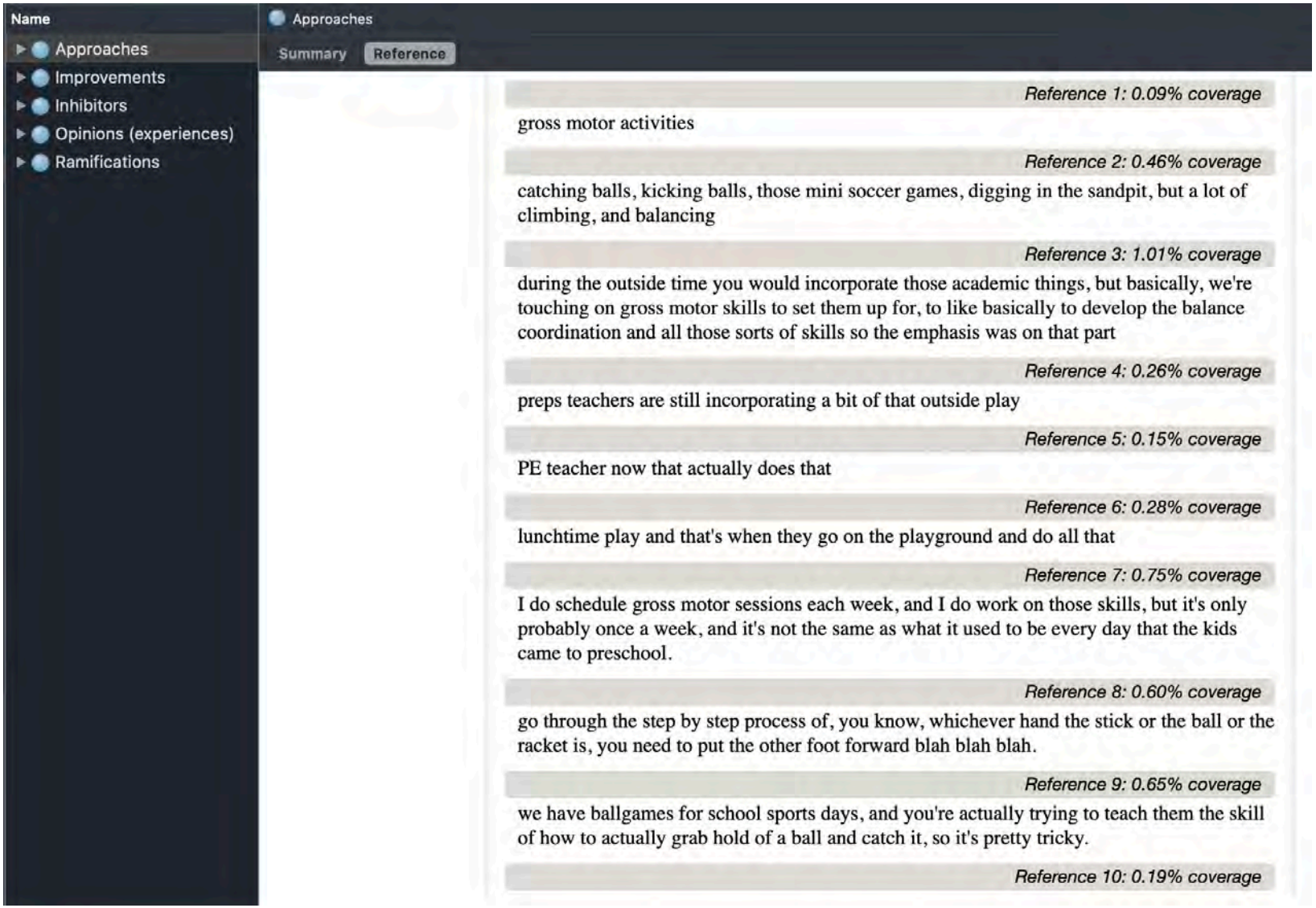
L: if you need any more help, just send me an email, we can talk more.

Example of Coding Process Using NVivo

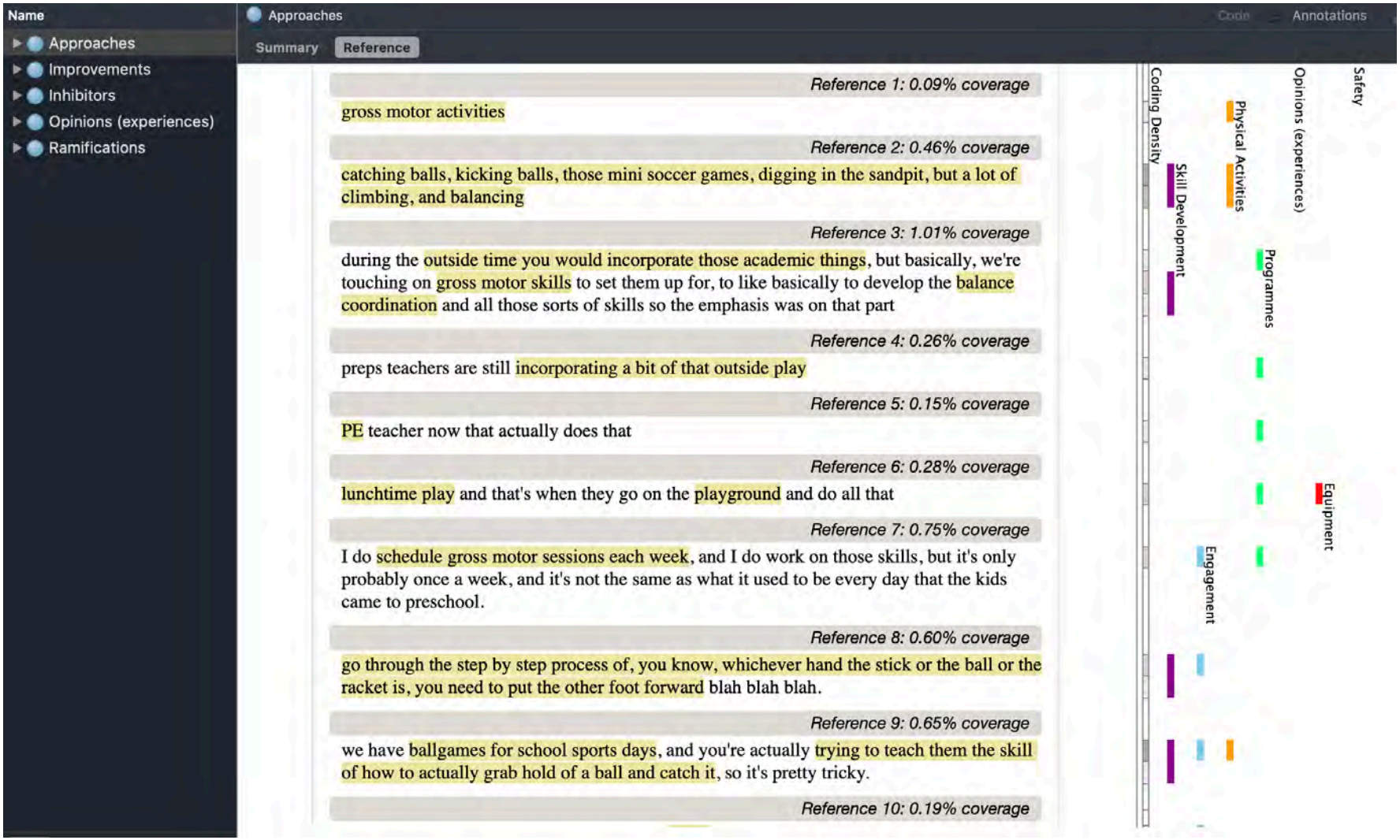
Highlighting sections, assigning them to Approaches, Improvements, Inhibitors, Opinions, and Ramifications.



Once coded into themes they generate points within that theme in a different section.



Points within this theme were then coded to explore the underlying themes.



Survey Questions

Tell me how strongly you agree or disagree with the following statements:

1. I believe that the current Australian Curriculum incorporates physical activity well
2. I believe that the curriculum impedes opportunities for children to be physically active
3. I believe that screen-based sedentary activities (e.g. playing video games, watching television etc.) can impact on child's willingness to participate in physical activities
4. I believe that screen-based sedentary activities can have an impact on a child's ability to participate in physical activities
5. I believe that my children have the appropriate access to equipment to support physical activities
6. I believe that my child/ren should have access to more physical activity at school
7. I would like to see technology used more in the classroom to promote physical activity.

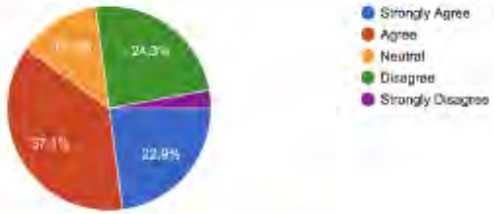
Tell me about how your child/ren engage in physical activity:

1. My children regularly participate in the following activities at school
2. The following activities are the most popular with my child/ren
3. The following activities are the least popular with my child/ren
4. If more physical activity was to be introduced into the curriculum, I would be most worried about
5. If more physical activity was to be introduced into the curriculum, I would be most interested to see
6. My child/ren currently use technology (e.g. interactive white boards, music, videos etc.), in the classroom to support physical activity
7. If you answered yes to the above question, please tell me more about these activities:

Survey Results

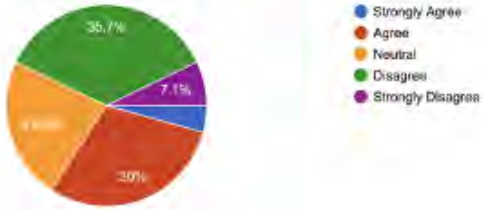
I believe that the current Australian curriculum incorporates physical activity effectively in primary schools

70 responses



I believe that the curriculum impedes opportunities for children to be physically active

70 responses



I believe that screen-based sedentary activities can have an impact on a child's ability to participate in physical activities.

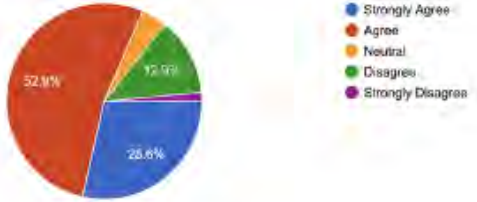
70 responses

I believe that screen-based sedentary activities (eg. playing video games, watching television etc.), can impact on a child's willingness to participate in physical activities.

70 responses

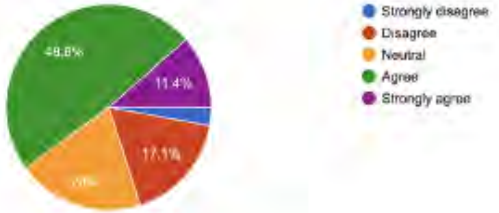
I believe that my child/ren have the appropriate access to equipment to support physical activity.

70 responses



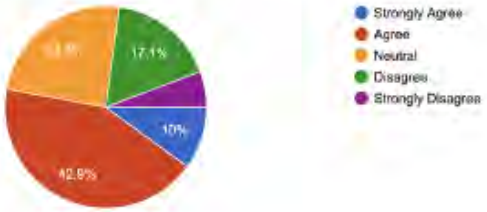
I believe that my child/ren should have access to more physical activity at school.

70 responses



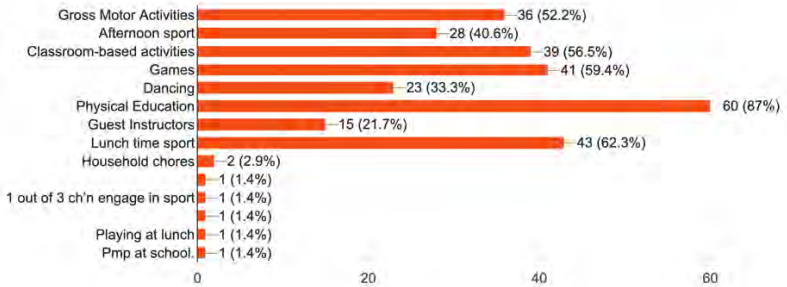
I would like to see technology used more in the classroom to promote physical activity.

70 responses



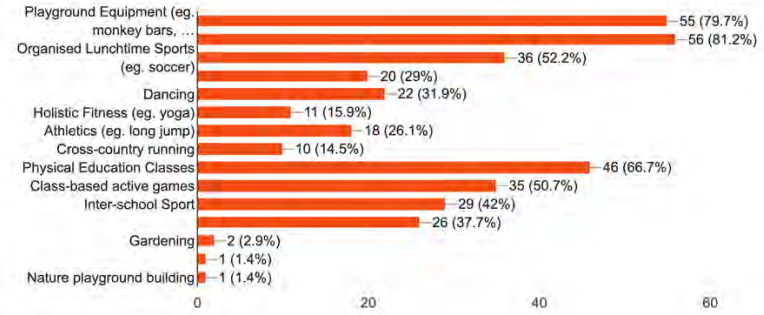
My child/ren regularly participate in the following activities at school. (Choose all that apply)

69 responses



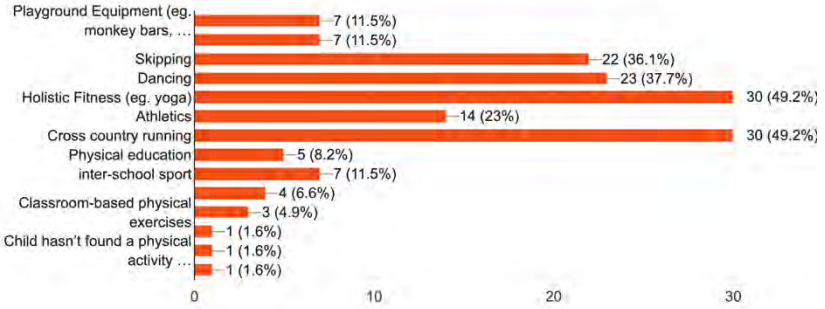
The following activities are the most popular with my child/ren. (Choose all that apply)

69 responses



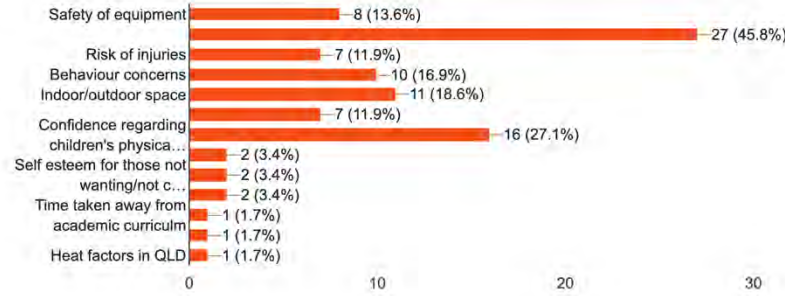
The following activities are the least popular with my child/ren. (Choose all that apply)

61 responses



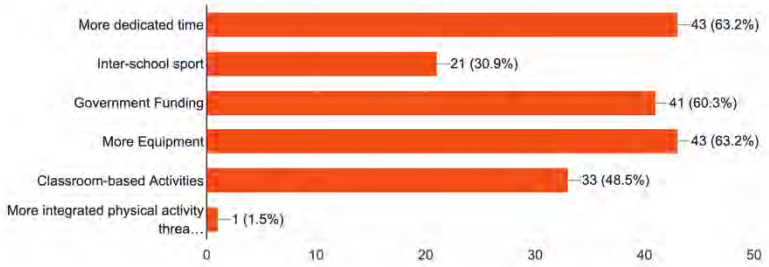
If more physical activity was to be introduced into the curriculum, I would be most worried about... (choose any that apply)

59 responses



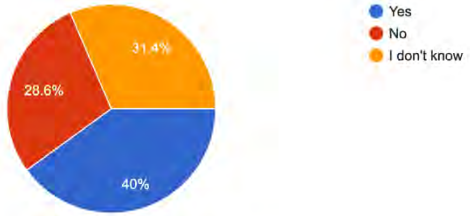
If more physical activity was to be introduced into the curriculum, I would be the most interested to see... (choose any that apply)

68 responses



My child/ren currently use technology (eg. interactive white boards, music, videos etc), in the classroom to support physical activity.

70 responses



If you answered yes to the above question, please tell me more about these activities:

22 responses

The students use technology to film things around school and then edit it in class. Tech is used to research steam experiments and experiments are conducted or constructed outside.

Used technology to teach dance moves and songs

Online activities such as GoNoodle, Moovlee and yoga because they use music with action.

Smart board

Just dance

White board iPad

White boards, iPads

To help the child increase their confidence

brain breaks

Go Noodle guided dance and exercise, counting with gross motor actions, alphabet songs with dances and movement, song and dance in math and literacy

Guided videos - exercises, yoga or dances

Gonoodle

games, songs, dance

YouTube clips

Whiteboard to engage with GoNoodle, Just Dance, Yoga etc

Teachers incorporate activities on IWBs during lessons, such as dancing.

Go noodle, yoga and dancing

Music, recording, video making

Just Dance routines are sometimes used to help get the kids to be active in the classroom.