Identifying Cross Curricular Linkages of a Class-Based Walking Challenge: An Exploratory Study

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Adult workplace intervention programs to improve physical activity through wearing personal pedometers and completing team orientated 'virtual journeys' have been shown to be useful in enhancing activity levels (Mummery, Schofield, Hinchliffe, Joyner, & Brown, 2006). Similar approaches applied to the school setting have also been trialled (Oliver, Schofield, & McEvoy, 2006), yet the full potential of web-supported class-based walking challenges to provide data and/or learning experiences to achieve learning outcomes within the academic curriculum remains largely undeveloped. The purpose of this study was to determine the feasibility of using a web-supported class-based walking challenge by identifying cross-curricular linkages to the mandated Queensland curriculum at the Year 5 level. These linkages are described in detail and barriers and constraints to delivery are described. Recommendations for teachers and schools contemplating a similar activity are provided.

Introduction

It is generally believed that a secular decline in childhood physical activity over the past two decades reflects the changing lifestyle associated with modern society (National Health and Medical Research Council, 1997). Such factors as; increased passive recreation (i.e. TV viewing, computer games, DVD's) and less active recreation (NSW Health, 2002), less active transport to and from school (Bauman, Bellow, Vita, Brown, & Owen, 2002), less engagement in school physical education programs (Corbin & Pangrazi, 2003), fewer convenient community recreation facilities, changes in family work- leisure balance that restrict active home play opportunities (National Health and Medical Research Council, 1997), and greater parental aversion to the risks associated with some sports and activities (Sallis, 1994), all contribute to lower childhood physical activity levels. This decline is of concern because of the adverse physical and psychosocial health consequences that are both acute and chronic in nature. In the short term, low levels of physical activity contribute, at least in part, to the increasing prevalence of childhood overweight and obesity; what is ubiquitously now referred to as the 'childhood obesity epidemic'. In the longer term, persistent low physical activity participation elevates the risk for major diseases of adulthood, particularly; hypertension, adult onset diabetes, coronary heart disease and stroke (Reilly, 2006).

Given the well established relationship between optimal physical activity and enhanced physical and psychosocial health, numerous health and allied government agencies (Department of Health and Aging, n.d.; National Obesity Taskforce, 2003; NSW Health, 2002; Queensland Health, 2002, 2005) advocate the need to increase the physical activity level of children. Various interventions strategies targeted at individuals, families, organizations, communities, and the physical environment have all been proposed as a means of increasing childhood physical activity (US Department of Health and Human Services, 1996). Schools, due to their unique access to virtually all children between the ages of 5-17, are almost universally promoted as intervention sites. Most commonly school-based interventions have sought to improve either the quantity or quality of physical education lessons, or have used a classroom-based health education curriculum focused on reducing television viewing and video game playing (Kahn et al., 2002). Research by Kahn et al. (2002) indicates that school-based interventions are often effective although the beneficial outcomes diminish with the passage of time, post-intervention.

Despite evidence of their efficacy, interventions of this type may often be perceived by teachers as 'add ons' or impositions and fail to gain broad acceptance or achieve widespread dissemination. This may be because of a congested curriculum that limits the scope of teachers to engage in educationally worthwhile learning experiences that do not directly connect with mandated syllabi. In Queensland, the mandated curriculum for Years 1 – 10 is

outlined within eight Key Learning Areas[1]. Each Key Learning Area (KLA) syllabus specifies core learning outcomes that are arranged in six levels of increasing sophistication and complexity. Taken together, the eight KLA's have led to a proliferation of outcomes and exacerbated an already congested curriculum. For example, across Years 4 and 5, it would typically be expected that children be provided with multiple opportunities to achieve 100 Core Learning Outcomes (CLO). This presents an often challenging and daunting learning design task for teachers. Some curriculum advisors have encouraged teachers to meet this challenge by designing units of learning that address multiple CLO's within strands, across strands, across levels, and across KLA's. The latter is usually labelled 'cross-curricular integration' (Fogarty, 1991) and when successfully implemented may ease curriculum congestion.

Since the development of the modern electronic pedometer, there has been greater use of this device for both the objective measurement of ambulatory physical activity within research studies, and as a motivational and educational tool (which provides immediate behavioural feedback) during intervention programs to increase physical activity (Tudor-Locke, 2002). For adults, '10,000 Steps' has achieved wide recognition as a goal target for good health outcomes (Hultquist, Albright, & Thompson, 2005). For young children, step-based physical activity recommendations vary from 11,000 and 13,000 daily steps for girls and boys respectively (President's Council for Physical Fitness and Sports) to 13,000 and 16,000 steps/day for girls and boys respectively (Duncan, Schofield, & Duncan, 2007).

Although some research has been undertaken of children's physical activity behaviour using pedometers, very little has investigated the efficacy of web-supported, pedometer based interventions that used student derived data and experiences to inform cross-curricular learning experiences. In one such study, Oliver, Scholfield and McEvoy (2006) reported the results of a 4-week trial of an integrated curriculum approach to increase habitual physical activity in primary school children in New Zealand. They demonstrated that 'the combination of pedometers, a virtual walk, and curriculum integration is feasible in a school setting' (p. 78) with significant gains in pedometer measured physical activity for the least active sub-groups. Although demonstrating beneficial physical activity outcomes for the children of their study, relatively little detail was provided regarding the logistics of program implementation for the benefit of teachers and school administrators.

To be successful, integrative or cross-curricular learning experiences require high quality curriculum materials that satisfy the planning and syllabus implementation requirements of teachers, and which preferably meet the needs and interests of children. This paper reports the results of an exploratory study to identify Queensland KLA cross –curricular linkages of a web-supported class-based walking challenge. Given the similarity of the Queensland KLA syllabi with those of the other Australian states and territories, the findings are also applicable to other jurisdictions.

Method

The current paper reports the feasibility of integrating a web-supported class-based walking program into the normal curriculum of a year five classroom. To achieve this purpose, an experienced Year-5 classroom teacher from a Catholic primary school located on Queensland's Gold Coast implemented a class-based walking challenge designed to replicate the core concepts of the *10,000 Steps* workplace challenge (Mummery et al, 2006). The key feature of the *10,000 Steps* program is that participants wear a personal pedometer to monitor daily step count during their waking hours. The step counts are recorded on an interactive website (www.10000steps.org.au) that displays either individual or team progress towards a pre-determined virtual destination. The class-based walking challenge was undertaken during the third school term in 2006.

The participating teacher agreed to identify the cross-curricular linkages of a walking challenge delivered at the Year 5 level, implement where possible, and identify barriers to the delivery of a walking challenge in the primary school setting. The teacher was encouraged to implement the walking challenge in any way that satisfied the learning needs of children, whilst meeting the curricular expectations of the Queensland Key Learning Area syllabi. The teacher maintained a diary record of learning experiences conceptualized (although not necessarily conducted) and delivered, whilst also identifying and recording any implementation problems. At the conclusion of the walking challenge the classroom teacher's knowledge and experience was recorded during a semi-structured interview. The recordings were then transcribed to identify major themes and findings and these were then presented to the teacher to confirm the validity of the research results.

Although the primary focus of the research was to identify the cross-curricular linkages of the web-supported class-based walking program, indirect feedback was obtained from parents and students as part of the teacher's ongoing informal evaluation. This occurred periodically as the teacher sought student's comments regarding their engagement with the various learning experiences and parents' perceptions of the impact upon family life.

Ethical approval to undertake the research was granted from the Central Queensland University Human Research Ethics committee. Approval to conduct research within the catholic school was granted by the local Diocese.

Cross – Curricular Activities

The nine-week walking challenge provided an extended period of time for the implementation of the curriculum intervention. This allowed sufficient time for the teacher to familiarize students during in-class learning experiences with the use of the pedometers. As part of orientation activities, students were shown the correct placement of the pedometer, how it opens and closes, the effect of hand jiggling etc. This had the benefit of reducing the novelty factor so that children quickly became comfortable wearing the device without the constant temptation to handle and check step counts. Once children had acquired competence to use the pedometers, greater responsibility was provided to children in Week 2 of the intervention as they adopted a routine of wearing the pedometer for all viable activities during their waking-hours. This meant that children would remove pedometers during showering and other water-based activities and during combative physical

Week	Activity	KLA/s	Brief Description
1	Familiarisation activities	Health and Physical Education Maths SOSE	• Discussion of pedometers and the relationship of physical activity to health. Distinction between physical fitness, health, and fitness components. Recommended activity guidelines for children. • Children used scale on maps to measure distances between Australian locations. Children used these skills to estimate travel time between locations. • Children completed simple activities to familiarise themselves with wearing and operating pedometers, to estimate distances and the number of steps required to reach a destination and to remove the curiosity factor and temptation to shake and interfere with their pedometers. • Children established the length of their own steps. • Introductory activities to complete step logs.
2	Specific Walking Challenges	Maths SOSE	• Children engaged in specific class challenges to walk to set destinations. • Challenges changed every few days, distances were extended each time. • Step Logs changed to simplify recording of data.
3	Team Challenges	Maths Language SOSE HPE (PD strand)	• Students broke into mixed gender friendship groups, selected a destination which could be a tourist destination. • Researched distance to destination, prepared a short presentation about their destination. • Students demonstrate communication, cooperation and decision making skills to collaborate in team situations
4	Team Challenges and Games Overseas challenges	Maths SOSE Language Religious Education ITC HPE (Health strand)	• Children researched biblical locations. Used atlases and scale to establish distance and steps. Completed as a challenge (eg walk from Port Said to Mt. Sinai in Egypt). • In groups, children began to develop simple games which could be used to promote the most activity in the shortest time. • Children began to use Microsoft Excel to develop spreadsheets of their weekly activity. Results were graphed and used to detect patterns in activity and set goals. • Team challenge to walk south over four days, team with the highest average distance would be the winners. • Students identify and recommend actions they can take to promote their health in response to social, biological or environmental factors.
5	Step Logs Team Games	Maths Team skills Science	• Children maintained step logs. • Children presented and played games developed by groups. Maintained a step log throughout the activity to predict and record steps during each short game. • Students hypothesised which characteristics of games would most greatly influence step counts. • Later discussed aspects of games which promoted activity in a short time and compared to predictions.
6	Step logs Team Games	Maths HPE (PD strand)	• Children maintained step logs. • Children refined games based on discussions to develop new versions which would promote even greater activity in a short time. • Children designed and presented games.
7	Team Challenges	Maths Technology	• Team captains set up teams on the 10000 Steps web site. • Children worked in teams to record, collate and enter daily steps into the 10000 steps web site.
8	Team Challenges	Maths Technology	• Children worked in teams to record, collate and enter daily steps into the 10000 steps web site. • Attempted to use web site to monitor progress and set new goals.
9	Team Challenges	Maths Technology	• Children worked in teams to record, collate and enter daily steps into the 10000 steps web site.

Table 1. Weekly Summary of Curriculum Activities using Pedometers

activities where accidental damage to the pedometer or injury to their body was possible. Table 1 provides an overview and progression sequence of the learning experiences that were conducted over the nine weeks of the walking challenge.

Findings

The paper now examines specific learning experiences derived from the walking challenge as it relates to each of the Queensland Key Learning Area syllabi.

Maths Key Learning Area

The use of the walking challenge data was deemed appropriate in addressing the core learning outcomes from the Queensland Years1-10 Maths KLA. The concept of averaging numbers was introduced and practiced extensively using step-count data accumulated over days and weeks of the walking challenge. The concept of approximation was also addressed as children would use the pedometers to record step counts over set distances (i.e. 50 metres) and then ascertain average stride length. Children were then required to estimate their step counts for other known and unknown distances.

Average stride length for the class was determined (see Figure 1) and then total step counts to predetermined destinations were established. As these destinations were relatively close, the progress of the class (combined effort) was mapped. For example, the class did a virtual walk from the Gold Coast to Brisbane and returned in one day. Multiple digit addition and subtraction was utilized in this task to measure progress toward goal and calculate remaining steps to target. Whilst not undertaken as part of the walking challenge, the mathematical concept of percentage could also be introduced and/or consolidated using the real data from this learning experience. For example, what percentage of the journey has the class completed? The participating classroom teacher reported that students appeared to show an increased proficiency working with and discussing numbers over 10,000; an outcome above the expectations for Year 5. Line graphs (see Figure 3) were also used to visually display step counts taken on a weekly basis.

Walking Investigation

This investigation will help us get used to using pedometers, as well as work out your step length and distance traveled.

Total distance covered in 10 steps : _____

Total distance divided by 10: _____ / 10 = _____

This means your average step length is _____

Week One Step Log

Day	Steps (from pedometer)	Extra Activity * (mins. in mod – vig activity x 100)	Total Steps
Day 1			
Day 2			
Day 3			
Total of 3 days			

* This is a measure of 'steps equivalents' for activities when pedometer was not worn, i.e. during swim training, playing contact sports.

Total of three days divided by 3 equals your average number of steps each day.

Total _____ / 3 = _____steps per day

To find out how far you walked in three days, multiply your total number of steps by the length of your step.

_____ x _____

Step Length Number of Steps in 3 days

= _____

Total distance covered in 3 days

Figure 1. Worksheet to determine Average Step Length and Daily Steps

Study of Society Environment (SOSE) Key Learning Area

A number of SOSE outcomes were addressed through the walking challenge. Mapping skills were addressed by having students identify routes and calculate distances (using scales) to self-selected tourist destinations. Map interpretation and the use of compass to orientate maps were included in these activities. Students were then given broad parameters to identify a tourist destination that their team would walk to as part of a virtual journey. The route and length of journey (and associated step count) were calculated. Teams then monitored and mapped their progress to that destination. Concurrently, with the mapping activity, teams collectively researched the local region to develop a tourist brochure for that destination.

English Key Learning Area

Outcomes for English KLA were addressed as part of the walking challenge by means of two written and oral presentation learning tasks. The tourist brochure required written text be presented in an appropriate genre for class perusal, and this was accompanied by an oral presentation jointly delivered by all group members. In a similar vein, students were also required to formulate an active game to be taught to their colleagues. In developing the game, teams of students worked cooperatively to formulate rules, write these formally in clear and concise language, and then finally to present the game and rules to their colleagues prior to actual engagement. The task was reported by the participating teacher as being an acceptable means of having students clarify instructions and answer questions from peers.

Science Key Learning Area

In small groups, students were required to develop an active game with the explicit purpose of maximizing physical activity and step counts for the entire class (Week 3). Each group presented their game to the class and this was followed by participation in the game that was intended to be up to five minutes in duration. Prior to the commencement of the game, each participant was required to estimate how many steps they would take within the game. Following the game, step counts were recorded and then later cumulated for the class. Six games were presented in total. The characteristics of the games and associated cumulative class step counts were then analysed by the class. A number of relationships were identified and scientific hypotheses or inferences were then made. For example, elimination games reduce physical activity, rectangular fields increase step counts more so than similarly sized square fields, and complex rules increase stoppage time and reduce step counts. Based upon these findings, groups were required to re-design, trial and evaluate new versions of their games to maximize physical activity/step counts. The primary science concept to be developed was that of testing a hypothesis and then controlling for variables. See Figure 2 for a template of this activity and associated questions that students needed to consider.

Walking Challenge Investigation.

This activity will allow you to see which of the games designed by the class are best at increasing the step-counts of the players.

Procedure:
Prior to each game, predict what you think your step count will be after the 5-minute game. Record your steps after each game – **RESET** your pedometer after recording your steps.

	Prediction/Goal	Steps taken
Steps before your first game		
End of game 1		
End of game 2		
End of game 3		
End of game 4		
End of game 5		
End of game 6		
Total steps during games		

Which game helped you to take the most steps?

What was it about this game that helped you to take lots of steps?

Which game made you take the least number of steps?

How would you change the games to make you take more steps?

Revision Tasks.

1) Calculate the average number of steps taken for the games.

2) Calculate the average number of steps taken in one minute.

Figure 2. Worksheet for Active Games

Amy's step log

My total steps this week: 103645

Total distance walked this week: 62187 m.

Day with highest step count and distance walked: Sunday – 10842 m.

Activities which helped me achieve a high step count: running training and playing soccer.

My goals for this week: Run around the block and shuttle runs. Try to increase my Saturday step count by 6000 steps. Increase average daily step count by 1000 steps.

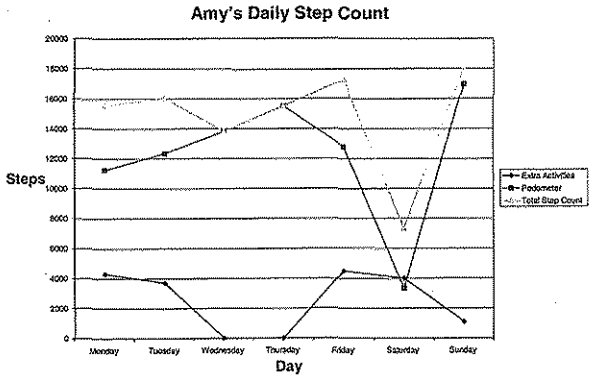

Figure 3. Example of Line Graph produced using Excel. Analysis of personal performance and goal setting incorporated into this activity

Technology Key Learning Area

Technology outcomes concerned with using spreadsheets and the internet to access and present information were addressed through the use of the walking challenge. The use of electronic spreadsheets in the calculation of overall step counts and distances provided opportunities to meet core learning outcomes within this curriculum area. Work sheets and graphs (see Figure 3) were also completed on a weekly basis and these provided multiple opportunities to; practice and refine manipulation of electronic spreadsheets, interpret graphs, detect patterns within their physical activity participation, and explore the graphing options provided within Excel.

Health and Physical Education Key Learning Area

Outcomes in all three strands of the Queensland Yrs 1-10 HPE KLA were found to be successfully addressed through the use of the walking challenge. Health Education (Strand 1) outcomes were addressed throughout the walking challenge as students engagement led to class discussions regarding physical activity and its relationship to the dimensions of health. The target of 10,000 Steps and the significance of this as a threshold or goal for children's physical activity participation was discussed along with the concepts of health related fitness components, exercise intensity, and the benefits that different forms of activity provide.

Physical Education (Strand 2) of the KLA focuses upon the development and refinement of motor skills. The walking challenge and the curricular activities associated with the challenge did not seek to directly enhance motor skill development of children. However, health related fitness components of children may have been enhanced through greater participation in physical activity. Anecdotal feedback from the students to the teacher indicated that they were conscious of modifying their behaviour in order to increase daily step counts.

Personal Development (Strand 3) outcomes were achieved via group processes in the tourist brochure and active game development tasks. Both of these tasks required cooperation and effective group processes for successful completion. Individual goal setting (see Figure 3) and achievement of personal goals within the walking challenge activities led to a sense of satisfaction and accomplishment for many students.

Discussion

Student Feedback Provided to the Teacher

Students reported that they were excited to wear the pedometers and enthusiastically engaged in the walking challenge. The majority of students reported that they enjoyed the curricular activities that integrated with the walking challenge, especially the various team challenges in which they engaged. Students indicated that they were strongly motivated to increase their step counts during team challenges. Although the classroom teacher did not promote the team challenges as a competitive event, students instinctively made these a race. They reported enjoying the maths activities derived from the data generated by their own efforts.

Some students found the nine weeks of the walking challenge to be too long and would have preferred a

challenge of shorter duration. The most commonly suggested time frame being four weeks. Because of an unanticipated disruption to the walking challenge, weeks four and five of the walking challenge required students to monitor and record daily step counts without significant curricular activities following from the data. Students consistently indicated that wearing the pedometer and recording data became boring at this time. It appeared that the excitement, novelty and motivational aspects of wearing a pedometer faded quickly without focussed curricular learning experiences devoted to the walking challenge, or the step count data that was generated.

Students reported that wearing the pedometer for the full duration of the day was achieved easily with forgetfulness only a minor problem. Students reported using a range of different strategies and routines to ensure that they wore the pedometer as instructed. Prompt notes on bedroom doors, and placing pedometer on most visible and /or prominent place when removing at night were strategies that many students used.

The students' school uniform did not require the use of belts. This presented a small problem as the Digiwalker DW 200 pedometer is designed to fit snugly onto a standard sized belt. Both boys and girls in this study preferred to wear their pedometers tucked over the lip of their shorts or skirts respectively. This presented two problems. With a belt mounting, no physical contact occurs between skin and the plastic of the pedometer. This was not the case for the children in this study. Many found the pedometer to be uncomfortable initially, but this dissipated over several days. Also, without the snug fit that comes with a belt mount, the pedometers were prone to slipping and being displaced. Many students reported that this occurred, however damage to the pedometer was avoided by attaching a small safety cord. It is strongly recommended the small additional cost of safety cords outweigh the potential cost and damage to pedometers in their absence.

Parental Feedback Provided to the Teacher

Feedback from parents revealed that the expectation for children to wear their pedometer for the entire waking-day occurred with little disruption to the normal routine of family life. Prior to the commencement of the walking challenge, it was anticipated that some demands may be placed upon parents to remind children of the need to wear their pedometers. Parents indicated that this rarely occurred and served to confirm the researcher's choice of the Year 5 level as the target audience for this intervention. The research team believed that children of this age (10-11yrs) would possess the cognitive maturity to wear the pedometers as directed, but still retain the curiosity and willingness to engage with enthusiasm.

Parents were asked whether they thought younger children could successfully engage with the walking challenge activities. Whilst they thought that younger children could engage in worthwhile learning activities based upon pedometer data, parents felt that much more support, prompts and reinforcement would be required at younger ages.

Suitability of Promotional materials

Firm targets for the walking challenge were not provided for the students in terms of 'must walk 10,000 Steps', however, students clearly established this as a target because '10,000 Steps' promotional posters were displayed on the classroom walls. 10,000 Steps is a commonly used step count target for adults and is associated with improvements in metabolic health (www.10000steps.org.au). For children, the target figure is considerably higher; with recommendations varying between 11,000 and 13,000 steps for girls and 13,000 and 16,000 for boys (President's Council for Physical Fitness and Sports, n.d.; Duncan et al., 2007). Because the children well exceeded the non-age specific target of 10,000 Steps it was perceived by the participating teacher that they acquired an inflated view of their performance. Whilst unintended this may be beneficial if this translates into continuing physical activity. Age specific promotional materials need to be developed if problems of this type are not to be replicated.

The resources and support provided by the 10,000 Steps website (see http://10000steps.org.au) were used sparingly during this program because of difficulties accessing and entering data. In large measure this was because team progress along virtual journeys could only be entered by team captains with individual email access. This meant that in a class of nearly 30 students, with six teams completing virtual journeys, with access to one shared computer only, considerable time was required for teams to enter this data. This created an impediment to realising the full potential of the online resources and the progress along virtual journeys. This problem could be overcome if computer availability were enhanced either within the classroom (i.e. multiple computers), or via ready access to computer laboratory facilities.

To further improve the educational benefits of the web resources it is recommended that designers of similar websites provide the class teacher with a 'master key' capability. This would allow simpler data entry and provide easier oversight by teachers of student's efforts and progress. Furthermore, the potential for the teacher to provide on-line feedback would be desirable as this could further motivate students. As with the step-count data entry deficiencies highlighted earlier, children's limited access to non-laboratory computers within the typical school classroom may restrict the effectiveness of on-line feedback.

Purchase cost

The purchase of a class set of pedometers (30 units) for the walking challenge was jointly funded by the school and Central Queensland University. At approximately $25 per unit, this is a significant expense for most schools. In line with advice sourced from the 10,000 Steps Workplace Challenge (www.10000steps.org.au), a class set of pedometers (with safety straps and instructional booklet) were purchased, placed in VCR cassette for individual storage, assigned to the school library and then made available to other classes, students and community members to use. This approach to the purchase and use of pedometers in the school setting is highly recommended as the initial costs are distributed over many classes and several years.

This research has shown the Digiwalker DW 200 pedometer to be sufficiently robust to handle the constant handling and rough treatment characteristic of children's play activity. Only one pedometer was broken during the 9-week intervention study, although it must be noted that pedometers were removed during combative activities.

Summary

This study sought to determine the feasibility of using a web-supported class-based walking challenge by identifying cross-curricular linkages to the mandated Queensland curriculum at the Year 5 level. In this regard, the research indicates that walking challenges that utilize pedometers to measure and record physical activity can provide data and inform learning experiences for effective cross-curricular integration. The research has also confirmed the utility of cross-curricular integration in terms of 'value adding' to the walking challenge participation. Both teacher observation and students' indirect feedback indicate that simply giving children a pedometer to measure daily step counts as part of a walking challenge fails to sustain student interest and motivation. What is vitally important is, 'what the teacher does with the data'. Imagination and creativity are key assets for all teachers and this certainly applies to extrapolating learning experiences to achieve broad cross-curricular learning outcomes from web-supported class-based walking challenges.

This research has demonstrated some ways that a web-supported class-based walking challenge may be integrated within the mandated Queensland curriculum. These learning experiences and strategies may serve as a prompt for other teachers who may wish to either extend or modify to achieve learning outcomes for their students. If this were to occur, it would be desirable that these ideas and strategies should also be available for public review. Therefore, it is recommended that further work in this area focus on the development of an online repository of lesson plans, learning experiences or teaching strategies that allow effective cross-curricular integration. Many online education resources already exist and for some sites simply providing specific walking challenge materials would be sufficient. Similarly, for those websites primarily designed to promote walking challenge 'virtual journeys' a dedicated teaching resources facility for educators would be valuable.

Continuing research into the efficacy of this type of intervention, particularly in terms of improving children's attitudes towards and participation in physical activity is strongly recommended. It is only when a convincing evidence base exists that demonstrates both an increase in children's physical activity engagement, and the achievement of mandated core learning outcomes that web-supported class-based walking challenges will be more broadly implemented within schools. In regards the latter, it is paramount that future research evaluates more formally the achievement of core learning outcomes across the spectrum of Key Learning Areas.

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Footnotes

1 Since the Hobart Declaration of the Australian Education Council, the agreed curriculum for all Australian States and Territories for the compulsory years of schooling has been structured under eight Key Learning Areas. Although the title of these differ slightly between states and territories, the eight KLA's for Queensland are; Maths, Science, English, HPE, The Arts, Technology, Languages other than English, and Study of Society and the Environment.