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12. EDUCATION FOR SUSTAINABILITY IN PRIMARY HEALTH AND PHYSICAL EDUCATION

Health and physical education is a combined and integrated curriculum area in Australia and New Zealand. While this approach is not always the case in all learning contexts (e.g., the UK), for the purpose of this chapter, we have positioned health education as the main focus for education for sustainability (EfS). Health is a fundamentally important concept for the sustainability of society. For a healthy society, we need healthy individuals who are living, learning and functioning within a healthy environment. What we choose to put into our bodies and our outlook and lifestyle choices have a direct impact on our health status, as well as having social and environmental implications.

Because choices concerning one's health can also have major implications for sustainability, students will benefit from learning experiences that help them understand the consequences of outlook and lifestyle on their inner and outer environments. Education for sustainability through health education involves developing an understanding about our bodies, our emotions and our interactions so that we can understand how health can be developed, maintained or damaged. Such understandings are influenced by the social, economic, political and environmental factors in our society. In this respect, health education for sustainability is essentially cross-curricular, linking scientific knowledge with social and environmental impact through the ethics and consequences of various forms of action. In order to promote meaningful learning to inform action for health, teachers will find the constructivist model of teaching valuable because it requires them to draw on children's views and experiences (Littleddyke & Huxford, 1998; Skamp, 2012). This approach also challenges children to extend their understandings through enquiry and investigation (see Chapters 3 and 6 in this regard).

WHAT DOES IT MEAN TO BE HEALTHY?

Views about health have changed over the years. At the beginning of the 20th century, when life expectancy was much lower, specifically, 55 for men and 59 for women in 1910, compared to 79 for men and 84 for women in 2010 in Australia (Australian Institute of Health and Welfare, 2012), health was seen as the absence of disease. However, contemporary definitions view health in a broader and more holistic way. For example:

Good health implies the dynamic balance between individuals (or groups) and their environment. To the individual, good health means improved quality of life, less sickness and disability, a happier personal, family and social existence and opportunities to make choices at work and recreation ... To the community, good health means a higher standard of living, greater participation in making and

implementing community health policies and reducing health care costs. (Better Health Commission, 1986, cited in Pecujac, 1998)

This definition highlights the dynamic nature of health across the lifespan and further recognises that health affects both individuals and communities. Health can be seen as composed of four broad dimensions—physical, social, emotional and spiritual. Maintaining an optimal level of health and wellbeing requires a balance and interaction across all four (see [Figure 12.1](#)).

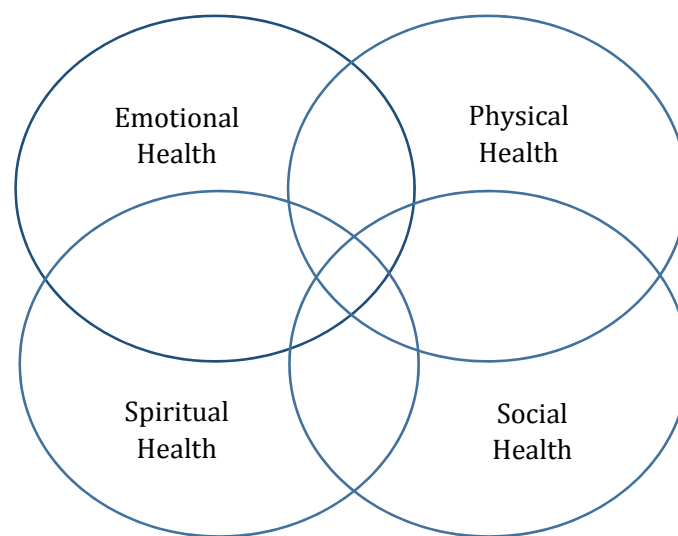


Figure 12.1. The dynamic interplay between emotional, physical, spiritual and social health.

This model of dynamic interplay is well accepted in the Australian and New Zealand health education context because it illustrates the intersections between the various dimensions of health and highlights a multidimensional approach to health education.

- *Emotional health* refers to ability to manage and express emotions. Because our emotional health is influenced by self-esteem and confidence, an important aspect of health promotion is that of developing confidence and emotional balance in children. This balance has a direct impact on learning, given that confidence, self-esteem and motivation are closely linked with achievement (Coopersmith, 1964; Marsh & O’Mara 2008). A supportive environment is important in helping children cope with social pressures to make unhealthy lifestyle choices, and deal with stress and anger.
- *Physical health* refers to how well our bodies function, with that functioning affected by nutrition, physical activity, use of drugs, genetic makeup and environmental conditions. It is measured through factors such as heart rate, blood pressure, body size and fitness.
- *Spiritual health*, the basis of which can be religious, humanistic or environmental, is underpinned by a caring outlook and feeling part of a wider world. It gives a sense of purpose and belonging. EfS promotes such values because a sense of connectedness is

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part of supporting empathy for and a sense of responsibility to other people and to other living things; both are precursors for action to support others and the environment.

- *Social health* is affected by our interaction with other people, including family, friends and school colleagues. It influences our ability to form relationships, interact with others, enjoy social relationships and feel a sense of belonging. School plays a very important role in social health in terms of promoting and modelling caring, supportive relationships.

HEALTH EDUCATION IS A WHOLE-SCHOOL RESPONSIBILITY

It is widely recognised that health education is most successful when it is implemented across the broader school environment (Nutbeam, 2000). Other areas of the curriculum, along with wider school policies and practices, can reinforce students' learning of health-related knowledge and their gaining of understanding and skills in this area. This "broad sweep" means that health education affects everyone in the school and its community, from students, teachers and non-teaching staff to parents, governors and community members. This whole-school approach to health education, known widely as the "health-promoting school" (Lakin & Littledyke, 2008), endeavours to engage whole school communities in health-promoting policies and practices across three inter-related components: curriculum, teaching and learning; school ethos and environment; and partnerships and community links. The health promoting school has been broadly advocated and implemented in schools across Australia and New Zealand.

As set out by the World Health Organization (1989), a health-promoting school aims to:

- develop good links between associated primary/secondary schools in planning a coherent health education curriculum;
- actively promote the self-esteem of all students by demonstrating that everyone can make a contribution to the life of the school;
- develop good staff/student and student/student relationships in the daily life of the school;
- make clear to all staff and students the social aims of the school, including through provision of stimulating challenges, made up of a range of activities, for all students ;
- take every opportunity to enhance the physical environment of the school;
- promote staff and student health and wellbeing;
- consider the exemplar role of staff with regard to health-related issues;
- consider the complementary role of school policies to health education (e.g., policies on smoking, bullying, healthy eating);
- develop good school/home/community links and shared activities;
- use the potential of specialist services in the community for advice and support with respect to health education; and
- develop the education potential of the school health services beyond routine screening and towards active support for the curriculum.

While a health promoting school has such aims at the core of its activity, effective health policy will be specific to the school and best developed through wide consultation with members of the school community. This approach ensures that health-promoting efforts are responsive to contextual demands and are understood and acted on by everyone involved. Successful implementation of such a policy into effective practice depends on how well the

school community is committed to the aims of the policy. Strong commitment is evident in schools that reinforce health education as a whole-school community responsibility.

HEALTH EDUCATION AND THE CURRICULUM

The health education curriculums of both Australia and New Zealand incorporate all four broad dimensions of health. Most recently, the development and release of the Australian Curriculum for Health and Physical Education (Australian Curriculum, Assessment and Reporting Authority [ACARA], 2014) has brought in a set of educative outcomes for students that can be consistently applied across the country. At present, the individual states and territories are facing the challenge of negotiating and adopting this curriculum. However, many professionals remain hopeful that a more cohesive, comprehensive approach to health education will be implemented across Australia. As Dodd has pointed out:

The curriculum should be seen as evolving and dynamic, adjusting to social, political, technological and cultural change as it occurs ... Australian states have developed their own curriculum frameworks with great variations from the Statements and Profiles of 1994 ... Indeed, we have a parade of curriculum frameworks each with their own personalities and faces working alongside the notion of a national framework. (Dodd, 2000, pp. 38–40)

Fundamental to the Australian health and physical education (HPE) curriculum is a strengths-based approach, characterised by a strong focus on helping students develop the knowledge, understanding and skills required to make healthy, safe, active choices (ACARA, 2014). This approach is a shift away from the deficit, risk-based model of teaching health that has long dominated the school context. Rather than teaching the dangers of engaging in risky behaviours (drug use, smoking, poor nutrition), the new approach stresses developing students' ability to enhance their health and that of others. Within the HPE curriculum, health content is embedded in the personal, social and community health strand and incorporates such aspects as being healthy, safe and active; communicating and interacting for health and wellbeing; and contributing to healthy, active communities (Table 12.1).

In New Zealand, the HPE curriculum strands are nationally consistent and framed around developing the wellbeing of students beyond the classroom (New Zealand Ministry of Education, 2007; New Zealand Ministry of Health, 2012). Students develop their understanding of the factors—lifestyle, economic, social, cultural, political, environmental—influencing the health of individuals, groups and society. Students develop not only competencies for mental wellness, reproductive health and positive sexuality, and safety management, but also understandings of nutritional needs. They build resilience by strengthening their personal identity and sense of self-worth, managing change and loss and engaging in processes for responsible decision-making. They learn to demonstrate empathy, and they develop skills that enhance relationships. Students use these skills and understandings to take critical action to promote personal, interpersonal and societal wellbeing.

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Table 12.1. Health and physical education strands in Australian and New Zealand HPE curriculums.

State/country	Health and physical education strands
Australian health and physical education curriculum	<p><i>Strand:</i> Personal, social and community health</p> <p><i>Sub-strands:</i></p> <ul style="list-style-type: none"> – Being healthy, safe and active – Communicating and interacting for health and wellbeing – Contributing to healthy and active communities <p><i>Focus areas:</i> Alcohol and other drugs, food and nutrition, health benefits of physical activity, mental health and wellbeing, and relationships and sexuality</p> <p><i>Strand:</i> Movement and physical activity</p> <p><i>Sub-strands:</i></p> <ul style="list-style-type: none"> – Moving our body – Understanding movement – Learning through movement <p><i>Focus areas:</i> active play and minor games, challenge and adventure activities, fundamental movement skills, games and sports, lifelong physical activities, and rhythmic and expressive movement</p>
New Zealand curriculum	<p><i>Strands:</i></p> <ul style="list-style-type: none"> – Personal health and physical development – Movement concepts and motor skills – Relationships with other people – Healthy communities and environments <p><i>Underlying concepts:</i> wellbeing, health promotion, the socio-ecological perspective, attitudes and values</p> <p><i>Key areas of learning:</i> mental health, sexuality education, food and nutrition, body care and physical safety, and sport studies and outdoor education</p>

HEALTH EDUCATION FOR EFS

The health education curriculums of both Australia and New Zealand offer numerous opportunities through which to implement the broad aims underpinning EfS. Sustainability is highlighted as a cross-curricular priority in the Australian Curriculum (Foundation to Year 10), wherein “students explore how they connect and interact with natural, managed and built environments and with different social groups within their social networks and wider communities” (ACARA, 2014, p. 15). The roles young people can play in sustainability through choices relating to active transport, food options and the capacity to advocate and act for a sustainable future are key to how curriculum planners and teachers can use health education to enhance EFS.

Constructivist approaches to teaching facilitate meaningful learning because they take into account students’ prior views and experiences; hence, a good place to start a health education

for EfS programme is to ask students what it means to be healthy. Have the children form small groups and ask group members to share ideas (thus promoting social constructivist learning) on producing a group poster that includes annotated drawings showing the factors that contribute to optimal health. Younger children could select and cut out images from a wide selection of magazines to reflect *positive* images of health, or you could scribe what they say about their drawings so as to summarise their ideas. Initially, it is likely that the children will focus on physical health, so it may be necessary to encourage them to think as widely as they can in order to include content on how our bodies work best (physical health), how we feel about ourselves (emotional health), how we get along with others (social health) and how we care for other people and other living things in the world (spiritual health) (see Figure 12.1).

Any programme of activities for effective health education for EfS should ideally develop the following:

- positive attitudes towards the four dimensions of health—physical, emotional, social and spiritual;
- understanding of factors that contribute to good health, including behavioural, environmental (social and physical) and political;
- understanding of student “agency” in relation to health;
- awareness of the social pressures that can influence health choices and possible strategies for overcoming them;
- health-enhancing skills;
- positive connections and interactions with the environment, including the natural, managed and built environment;
- responsible actions to promote healthy communities and environments;
- appreciation of the link between the health of people and the health of the environment;
- understanding of sustainable methods of living, including travel and nutrition;
- skills in growing, sourcing and choosing sustainable food products; and
- understanding the benefits of immersion in the natural environment through active transport and outdoor recreational pursuits.

APPROACHES TO TEACHING

Healthy relationships

As teachers, we need to take into account students’ learning needs, which are influenced by their experience and maturation as they move from learning through concrete experiences to increasing ability to consider abstract ideas. However, no matter what their age, students need to have their social and emotional health supported by a positive classroom ethos, so that they learn to interact positively with one another and feel confident and secure about themselves. You can also emphasise caring for other living things by having students investigate local environments, treating them with respect, handling animals and plants carefully and returning animals to where they were found if they are temporarily moved for observation (Lindemann-Matthies, 2005).

With younger primary children (e.g., K to Year 2: four- to seven-year-olds), a focus on their direct experience provides the ideal basis for activity. Accordingly, we need to centre

health education for EfS on the children's immediate world. Circle time or drama activities provide good opportunities to boost and nurture self-confidence and caring actions, further supporting emotional, social and spiritual health, the development of emotional intelligence (Golman, 1996) and multiple intelligences (Gardner, 1993), and hence ultimately the sustainability of the children's local social systems.

Circle activities As the name suggests, these activities are conducted mainly while the children are in a circle formation.

- *I'm special*: Children say their names first time round and then add something they enjoy or are good at next time round.
- *You're special*: Children take turns to be the focus. The other children say something they like or admire about the special person.
- *Finish the sentence*: Begin (i.e., you, the teacher) with the sentence, "I'm happy today because ..." Children complete, in turn, with their reasons, or pass if they prefer. After some experience of this activity, children can start their own sentences with what they are feeling; for example, "I'm excited, eager, cheerful, contented, sad, miserable, nervous, worried (etc.) because ..." An alternative is to make a large dice with such terms on it and to have the children take turns throwing it and then completing the sentence that appears on the up side of the thrown dice.
- *Web of friendship*: Pass a ball of string to a child, who then calls out another child's name and passes the ball to that child, so continuing on until a web of friendship emerges.
- *Web of life*: Have the children wear stickers featuring the names or pictures of plants and animals found in a local ecosystem. Guide them into passing the ball of wool around in a way that shows what depends on what for food until they have built up a food web.
- *Recognising emotions*: Hand around a series of cards that represent a wide range of people in different situations. Ask students, one at a time, to identify the emotion they believe is being expressed by the person in their picture and to provide a scenario that may have contributed to this emotion (e.g., fear—being chased by a dog; excitement—having a birthday party; sadness—death of a grandparent).
- *Qualities of a friend*: Race around the group, asking students to contribute one quality that is important in a good friend. Next, discuss with the class and record in a Y chart what a friend "looks like" (what actions they show), "feels like" (how they make you feel) and "sounds like" (things they might say).
- *Case studies*: Read out a series of relevant and age-appropriate case studies to students. After you have read each one, ask students to discuss with the person next to them how they think the character could act in order to appropriately manage the situation.
 - Example 1: Joe is playing basketball with his friend Alexis when an older student comes along and demands that they give her the ball. When Joe and Alexis refuse, the older student grabs the ball and runs with it to the other side of the yard.
 - Example 2: Melissa is putting the finishing touches on her art project. Her younger brother runs into the room and accidentally knocks over a bottle of paint, which splashes all over her work.
- *Network collage*: Tell students you want each of them to create a collage that highlights the various relationships in their life. Each student should be at the centre of the page and should surround that figure with drawings or photographs of the important people in their

life. Have the students, in circle formation, share their network collage with their classmates.

Moving in the room activities These activities can be conducted in the classroom or a large school space such as the hall, or they can take place outside in the schoolyard.

- *Greeting*: Ask the children to walk around the room and shake someone by the hand when they meet and greet them. Children can devise their own greetings, or they can use other languages to show how people greet one another across the world. Have children work in pairs, walking side by side and telling their friend their favourite food/activity/sport/how they got to school/where they like to play, etc.
- *Exploring similarities and differences*: Create a worksheet that contains a series of statements beginning with the words, “Find someone who ...” Here are some examples.
 - Find someone who was born in the same month as you.
 - Find someone who had toast for breakfast this morning.
 - Find someone who has travelled outside of their home country.
 - Find someone who shares the same favourite colour as you.
 - Find someone who follows the same sports team as you.

Students move around the room with their worksheets, talking to one another in order to find someone who matches each of these statements. Once a match is identified, the “matching” student signs the worksheet next to the corresponding statement. This activity encourages positive social interaction and communication amongst students. It also provides scope for discussing similar and different personal characteristics.

- *Leading the blind*: Ask the children to form pairs. One child in each pair is blindfolded or asked to close their eyes. This child then leads the other child around the room. This activity builds trust and affirms the idea of friends as people who keep us safe.
- *Guiding the blind*: Children stand in a close circle with a blindfolded (or with eyes closed) child in the middle. This child moves towards the edge of the circle and is gently guided back into the middle. Alternatively, the circle can be made as close as possible to the middle child, who sways while the circled children prevent that child from falling.

This last activity is also particularly good for building trust. It and the preceding activity can be adapted for older primary students (e.g., Years 3 to 6; ages 7 to 11), who will engage in the activities at their own level.

Drama activities are particularly useful for exploring the complexities of relationships. The example that follows focuses on exploring problems that can arise in relationships.

1. Begin by asking the children in pairs or groups of four to produce a “still image” (also called a “photograph” or a “freeze frame”) of an event where the students are fictitious characters. Ensure the issue is not about known people so as to maintain a safe environment. The still image should represent a significant moment encapsulating a problem at school, at home or in the community (e.g., bullying, stealing, teenagers tempting others to smoke or binge drink, wasting water or electricity by leaving taps and lights on).

2. Designate a student to a particular issue or “problem”. This student outlines what they are doing, after which you question the student to help them build up the “story” of the problem. Feelings and attitudes to other characters and possible solutions can be explored through such questions as: What do you feel about ... (other person in role)? Do you think it is fair ... and why? What do you think should happen?
3. Make sure the story is played out to completion so that a resolution is achieved. The resolution will need to show actions that could help solve the problem. The event can be repeated so that each person has a turn at being the central character. After exploring the situation, students will be in a position to understand how each person in role is affected by the problem and what responsibilities and possibilities exist for resolution. A useful way for students to report back while still in role is via, for example, a TV talk show, education pamphlet, newspaper article or even a simulated school policy that explains the problem and what might be done to resolve it.

Drama techniques such as the above offer powerful ways to safely explore simulated real-life issues as well as different characters’ experiences and points of view. Consequences of actions can also be made explicit and possible action for positive resolution identified (Littledyke, 1998; McNaughton, 2004).

Healthy bodies

The main issues to explore are how our bodies work, the effects of diet, activity patterns, hygiene, illness and drugs, and sex education and safety, all of which are linked with family life. These issues also bring in the psychological and environmental aspects of health education. Because it is not possible here to outline approaches to each of these topics in this large curriculum area, we refer you to Littledyke, Ross, and Lakin (2000) for background and approaches. However, approaches for younger children (K to Year 2; ages 4 to 7) will emphasise what is immediately accessible, such as identifying external body parts, feeling heartbeats, noticing chest movements during breathing and muscles during movement, and noting changes during activity in physical education sessions in order to find out how the body is made and how it works at a broad level. During their investigations, older children (Years 3 to 6; ages 7 to 11) can construct body outlines and draw on them what is in the body and what its various organs do. A useful mnemonic for older children that helps them remember the functions of all living things is MRS GREN. This mnemonic links into the descriptions of the functions and health of organs in [Table 12.2](#). It can also serve as a summary of ideas developed with a Year 5 class (ages 9 to 10) on the properties of living things, why they are necessary for survival, how humans carry these functions out and what is healthy or unhealthy. You can, of course, develop more details during your teaching. However, developing links in this way helps to establish the “big ideas” about health among children and shows which choices act to the benefit or detriment of good health.

Table 12.2. Parts of our body and keeping healthy.

<i>What are all living things able to do? They can all (MRS GREN):</i>	<i>Why do animals need to do this?</i>	<i>Which parts of our body do this?</i>	<i>What can we do to keep these parts healthy?</i>	<i>What will make these parts unhealthy?</i>
Move	To find the best places to live, find food, find a mate, look after young	Skeleton and muscles	Exercise, eat food that makes bones strong (e.g., calcium in milk/ dairy products)	No exercise or poor diet
Use oxygen and fuel for energy (Respire)	To get energy to live and do everything else listed	All body cells (e.g., lungs take in oxygen, gut takes in fuel)	Exercise, breathe clean air	No exercise; smoking affects oxygen intake
Be Sensitive to surroundings	Do everything listed under movement	Brain, eyes, ears tongue, nose, skin	Good food (e.g., Vitamin A in carrots helps eyesight); be active and alert	Being lazy, poor food
Grow	To grow into an adult and have young	All over body	Eat a balanced diet of carbohydrates, fat (fuel foods), protein (growth foods), vitamins and minerals (for health)	Unbalanced diet
Have young (Reproduce)	So they continue through their young and don't die out	Reproductive organs	Keep clean, good food	Not washing, poor food
Get rid of wastes (excrete—includes urine and carbon dioxide)	They would be poisoned and die	Kidneys, bladder, lungs (and skin, which has some urea in sweat)	Drink plenty of liquid	Not enough liquid, excess alcohol
Get food (Nutrition)	To grow, replace worn-out cells, provide fuel for respiration	Digestive system (blood transports food, oxygen for respiration and removes wastes)	Balanced diet: not too much (obesity) or too little (anorexia); eat plenty of fibre (in fruit and vegetables)	Unbalanced diet, not enough fruit and vegetables

Note: Table developed with Year 5 students and adapted from Littlelyke et al. (2000).

In addition to the MRS GREN learning activity, consider incorporating the following curriculum topics (“active transport” and “sustainable food choices”) into your programme,

as both offer approaches to teaching of health education for sustainability. They also demonstrate the interrelated nature of the two areas of health and physical education.

Active transport Active transport refers to the various modes of travel that involve physical activity and so include walking, cycling, riding a scooter, rollerblading and skateboarding. The health benefits of engaging in regular physical activity are well publicised; active transport has the potential to make an important contribution towards the recommended 60 minutes of daily physical activity for children. In New Zealand, 47% of children 5 to 14 years of age regularly use active transport to get to and from school (New Zealand Ministry of Health, 2012). However, in Australia, car travel remains the most frequently used form of transport. Data from the 2007 Australian Children's Nutrition and Physical Activity Survey (Commonwealth of Australia, 2008) found that only 32% of Australian children 9 to 16 years of age met the daily recommended guidelines for physical activity. Given that individuals who are physically active in childhood are more likely to lead active adult lives, providing opportunities for students to develop the skills, knowledge and understanding to safely and regularly engage in active modes of transport has important health implications now and into the future.

In addition to the health benefits, many environmental benefits are associated with primary school children using sustainable and active modes of transport, particularly as they journey to and from school. Some of these benefits (see also Garrard, 2012) include:

- reduced pollution and greenhouse gas emissions;
- reduced traffic congestion around schools;
- increased participation in physical activity and improved health outcomes;
- increased road safety knowledge and skills;
- greater connection to the local environment;
- strengthened social interaction and sense of community within local neighbourhoods; and
- improved community safety because “peopled” places are safer places.

These health and environmental benefits can be promoted through a range of learning activities for children. As the following examples show, active transport in health education curriculums provides particularly good scope for learning activities that can be adapted for a range of developmental stages from early childhood through to secondary school. Because children under eight years of age rarely have the capacity to fully assess the danger of moving vehicles, safety management should underpin all of these activities.

- *Transport diary*: Ask students to record all transport used across the period of a week, including both the mode (e.g., car, bus, walk, bike, etc.) and approximate length of each journey. Compile and graph the entire class's results to determine the most and least common modes of transport. Discuss the positive and negative elements of each mode.
- *Active transport for a healthy heart*: Ask students to record their heart rate before and after going on a class walk. Discuss the results.
- *Stop, Look, Listen, Think safety poster*: Discuss the steps that should be followed in order to safely cross the road. Have students create a safety poster highlighting the key message of Stop, Look, Listen, Think! Hang the posters around the classroom or somewhere within the school grounds.
- *Crossing the road*: In a large open space, ask students to estimate the width of a standard two-lane road. Have them mark their guess with two cones and then measure the distance using a tape. Explain that the width is approximately eight metres and have students

move their cones to signify this distance. Now ask the students to estimate how long it will take them to cross the road, but beforehand discuss with them the importance of walking straight across and at a brisk pace. Students can practise crossing the road while a friend times them. Discuss why it is important to walk quickly across the road, but without running. Combine this activity with the Stop, Look, Listen, Think safety activity. Students practise Stop, Look, Listen, Think, verbally endorse that it is now safe to cross the road, and then cross at a brisk pace.

- *Out and about*: Plan a class walk in order to investigate safe places to cross the road near the school. Students can photograph any pedestrian or road signs that they come across. Once back in the classroom, have students research and record the meaning of each sign. Discuss with students what factors contribute to assessments deeming one place as safe and another place as less safe.
- *Road-sign matching pairs*: Explain to the children that this activity involves a card game and that you want them to make the cards. To prepare the cards, students should draw or print out photographs of five to eight different road signs and paste each one onto a separate card. Students then research the meaning of each road sign and include that information on another set of cards. To play, cards are shuffled and placed face down on a table. Students take turns to lift two cards. If the cards are not a pair (i.e., a road sign matched with its meaning), they are replaced face down again in their position. If a pair is found, the successful student keeps the matching cards and has another turn. The game continues until all pairs are matched.
- *Plan a safe route to school*: Ask students to draw a map of the local area and to highlight on it a safe walking or bicycle route to and from school. The map should include any footpaths/bike tracks and pedestrian crossings along the way. Accompany the map with a written description outlining why this is the safest route to take.
- *Proposal to local council*: Have students write a letter to the local council proposing a series of changes in the local environment that would enhance the safety and appeal of active transport for community members. The letter should include a set of plans/drawings and a written justification of the proposed changes, supported with relevant statistics.
- *Mulga Bill's Bicycle*: Have the class together read out loud the poem “Mulga Bill's Bicycle”, written by Banjo Patterson. Discuss the factors that may have contributed to Mulga Bill's accident (e.g., reckless riding, environmental hazards). Ask the students to write a letter to Mulga Bill that outlines some important safety considerations for anyone riding a bike.
- *Correctly fitting a bicycle helmet*: Model and have students practise the procedure for correctly fitting a bicycle helmet. Outline the relevant laws and the safety reason for legislating that all bike riders must wear a helmet.
- *Safety clothing and equipment collage*: Tell students that you want them to use newspapers, magazines, catalogues or flyers to create a collage highlighting the safety clothing and equipment needed for “safety on wheels”—bike, scooter, skateboard, rollerblades (e.g., bicycle helmet, bright reflective colours, etc.).
- *Visit from a local police officer*: Invite a local police officer to talk to students about the laws and important safety considerations associated with riding a bike or using a scooter or skateboard.

- *Safety continuum*: Place the signs “Safe” and “Unsafe” at opposite ends of the room. Read out a range of statements to students and ask them to stand at a point along the continuum that reflects their response to the statement. Examples of statements include riding a bike without doing up the strap on your helmet, ringing your bell as you approach a group of pedestrians, riding on a footpath, and so on. Ask students to justify their position on the continuum.
- *Active transport snakes and ladders*: Help students create a game of “active transport” snakes and ladders. The game-board should highlight both hazards and important safety considerations when using active transport. Allow students to play one another’s games.
- *Role play*: Ask the students to form groups and then create and act out a scenario that highlights safe and effective use of active transport. Groups can share their respective scenarios with the rest of the class.
- *Environmental impact heads and tails*: Students respond to a series of statements relating to the environmental impact of transport by placing their hands on their head for “agree” or on their tail (bottom) for “disagree”. Discuss responses with students. Examples of statements include:
 - Australia is one of the world’s biggest polluters.
 - Road transport contributes around half of Australia’s greenhouse gas emissions.
 - Due to its environmental impact, the sale of leaded petrol was banned in New Zealand in 1996.
 - In New Zealand, land transport has a significant impact on local air quality.
 - Cycling produces no greenhouses gases.

Ride2School and the “walking school bus” As we mentioned earlier in this chapter, health education is most successful when implemented as part of a whole-school approach. In addition to being encouraged through classroom teaching activities, active transport can be promoted through the school environment and ethos by involving parents and other members of the community in health-enhancing strategies.

The Ride2School programme is one example of how schools are endeavouring to create an active transport culture. This programme promotes safe, enjoyable and regular cycling to and from school through the implementation of a range of strategies. These include the national Ride2School day, which celebrates the many benefits associated with bike riding, ensuring that schools are equipped with adequate bike racks, working with local councils to create or improve bike paths in the local area, and establishing online tracking systems (that students can log onto in order to record their bicycle travel) and incentives for children who ride to school.

The walking school bus is another example of an established programme that aims to enhance the health of primary school children. The walking school bus involves a group of children walking to and from school along a safe and enjoyable route. The walking bus picks up passengers at designated meeting stops along the way, with parents actively engaged in supervising the children. In addition to providing the benefits associated with increased physical activity, this programme promotes increased social interaction and a sense of connection to the local neighbourhood.

Sustainable food choices

Good nutrition is important for the healthy growth and development of children, and it remains an essential component of good health throughout life. However, making healthy food choices goes beyond good nutrition. The choices we make about what we eat have impacts on individual and community health as well as on air, water and climate. In Australia, the production, transport and waste disposal of food has significant environmental impacts, contributing to 26% of national greenhouse pollution and 47% of water use (Blue Mountains City Council & Sydney West Area Health Services, n.d.). Choosing sustainably sourced and unprocessed foods and minimising food travel, food wastage and food packaging can therefore have a positive impact on local and global environments.

The shopping bag game: health choices and their impact Shopping choices have a direct impact on our personal health, but they also have social implications and an environmental impact. The shopping bag game is a way of making clear the impact of buying various types of goods, including food, the focus of the game as presented here. The game can take place in a local shop, where students make notes and/or take photographs of their food choices, place them in a shopping bag, and then report back on them in school. Packaged items should have the details of the packet's contents visible so students can make suitable judgements as to which type of shopping bag their purchases represent. These bags (see the list below) focus on taste, cost, and health, as well as environmental/social impacts and ethics. To ensure representation of all the bags listed below, consider grouping the children and having each group make choices based on one of the bag categories.

However you decide to set up this activity, it is important that the children explain the effects of their choices to their classmates. A useful drama strategy is to have some of the children assume the role of reporters interviewing shoppers about their selections. They can write up the results as reports discussing the relevant issues and publish them in *Shopping Times* (a fictitious newspaper). Also, students could themselves investigate the implications of the various bag categories and provide their own descriptions of them.

1. *Tasty foods:* Taste is an individual matter, but highly influential in choice. (You may want to establish what students prefer to eat before they get underway with this activity.) Our senses are tuned to fat, sugar and salt and overeating because of evolutionary pressures in times when our ancestors had restricted access to food. Today, with an excess of food choices surrounding most of us, our challenge is to choose carefully what we eat, with the understanding that some foods are unhealthy when eaten in excessive amounts.
2. *Cheapest and most convenient foods:* These are characterised by low price and convenient preparation instructions (i.e., easy to prepare and eat). Despite these "attributes", such foods do not necessarily support health or reduce adverse social/environmental impacts.
3. *High in fat, salt, sugar, low in fibre, processed and no fresh food versus low in fat, salt, sugar, high in fibre, wholefood and fresh food:* The latter are healthy options, which may be more costly, but not necessarily so in a healthy, balanced diet if it is planned well.
4. *Fair-trade versus big-business-produced food:* Fair trade means the money goes to the growers of food rather than to large companies, where growers get minimal wages. A

fair trade logo will be displayed on the packaging. Fair trade tea, chocolate and bananas are examples.

5. *Locally produced versus far-away foods*: Locally produced foods involve the least transport and so reduce the amount of carbon dioxide emissions, while foods from more distant places lead to high levels of greenhouse gas emissions because they have to be transported to their markets. Place of origin is indicated on the packaging. Local markets are the most consistent source of such local foods.
6. *Organic versus non-organic foods*: So-called organic foods are grown by fertilising the soil with organic matter and are free of artificially-added chemicals such as pesticides, herbicides and fertilisers—a process that also supports soil health and biodiversity on farms. Non-organic foods are intensively grown. They are called non-organic because of the chemicals used in their production, and they can be cheaper than organic foods. The chemicals used in producing non-organic foods commonly involve high use of artificial fertilisers, which help plants to grow but lead over time to soil damage due to reduction in organic matter and soil bacteria, with resulting erosion. Fertilisers can also run off into waterways that then become overgrown with algae (water plants), leading to an increase in bacteria that remove oxygen from the water and killing off fish and other organisms (a process called eutrophication). Pesticides (killing crop pests) and herbicides (killing weeds) are poisons that can build up in foods, especially in fat in the living tissue of animals, and so become concentrated in food chains, potentially harming humans at the top of the food chain. This process is particularly evident today in regard to pesticides (such as DDT, which was used extensively but is now mainly banned), even though manufacturers insist they are safe. Also, while pesticides and herbicides kill plant pests and weeds, they also kill other non-harmful species, leading to loss of biodiversity.
7. *Foods that involve the least harm to animals*: Choices include vegan (no animal source) and vegetarian (including dairy products). Some people will eat fish rather than birds or mammals (arguably fish, which have been swimming free, have a “normal” life until they are caught and killed, although farmed fish present an ethical problem), or “free-range” animal products rather than products from “battery” or intensive farms. Free-range animals are kept in more natural conditions than exist in intensive, battery farms, which can involve considerable animal suffering. Public awareness of intensive “farming” practices has recently been heightened by some high-profile media personalities, and the situation is improving with better labelling and stocking by some supermarkets of more free-range or RSPCA-approved products. Battery farm products are, however, cheaper than free-range products because of the large number of animals that are packed into the space. Intensive farms also produce considerable pollution from animal waste run-off into waterways. In addition, methane produced by the huge number of farmed ruminants, a group of mammals that include cattle, sheep and goats as well as camels and buffalo, is a significant problem: methane is over 20 times more powerful than carbon dioxide as a greenhouse gas. (Ruminants have a unique, four-chambered stomach that can digest plants with the aid of bacteria able to break down a specific compound called cellulose.) Even if vegetarianism is not followed, reduced consumption of animal products is much more sustainable ecologically than is the present high levels

of animal food consumption. (For informative analyses of these choices, see Nestle, 2002, 2007; Nestle & Dixon, 2004; Singer & Mason, 2006; Smil, 2000).

8. *Foods with least energy impact:* Intensive agriculture of non-organic plants and animals uses high levels of energy for fertiliser, pesticide, herbicide production and fuel for machinery, which are linked to high greenhouse gas emissions through fossil-fuel-driven power stations. Organic foods involve low energy use. Also, eating foods low on the food chain, which means less meat and more plant sources, is considerably more efficient energy-wise because animal production is very inefficient, especially when prime agricultural land is used. We can produce over 20 times more plant protein than animal protein in the same area of land; hence, animals need far more land than crops. We would use considerably less land if we ate less animal produce, which also opens up the possibility of retaining important wilderness areas. Present levels of consumption of animal produce also require significantly large amounts of water irrigation, which is wasteful and agriculturally inefficient in drought-prone countries such as Australia.
9. *Foods involving reduced use of resources:* These foods come with minimal packaging and are typically carried home in reusable bags. Effort is also made to recycle any food waste, including through composting. The cost of the packaging is passed on directly to the consumer, while the costs to the environment brought about by wastes that are non-biodegradable (do not decay), such as plastics, are not included in any pricings. It is useful, with regard to this category, to encourage discussion on the implications of advertising and packaging, and on how manufacturers tempt us to buy their products.

Other activities The following activities provide useful follow-ons from the above activity, especially in terms of solidifying understandings.

- *Organic farming practices:* With the children, research or visit a local organic farm in order to learn about how organic farming practices differ from more traditional farming practices. Ask the children to create a poster that highlights the associated benefits of organic produce (e.g., reduced energy emissions, chemical-free produce). Discuss with them the conditions surrounding organic certification.
- *Exploring food travel:* Collect a range of food packages and disperse them amongst your students. Tell the children to examine the label on their piece of packaging to ascertain where the food was produced and packaged. Ask each of them to place a pin on a large world map to show their food's country of origin, and then attach another string from their pin to a larger pin identifying the location of the school. Use the questions below as the basis of whole-class discussions.
 - Which foods have travelled the longest and greatest distance?
 - Which foods have travelled the least or shortest distance?
 - Why do you think these particular products are imported?
 - What are some consequences for the environment of importing food products?
- *Sustainable menus:* Ask students to create a restaurant menu based on healthy, sustainable, ethical food choices.
- *Cooking with seasonal and local produce:* Tell students you would like them to create a fruit salad or pizza using local produce that is in season. Produce can be harvested from the school garden or purchased during a trip to the local market.

Kitchen garden programmes

Kitchen garden programmes have become increasingly popular in primary schools as a means of promoting environmental sustainability and healthy food choices amongst children. In New Zealand, many EnviroSchools develop school gardens as part of their focus on living landscapes (see EnviroSchools Foundation, n.d.).

Many different programmes also exist in Australia; the Stephanie Alexander Garden Kitchen is perhaps the best known (see Alexander, 2014). Established in 2001, this programme operates in approximately 600 schools across Australia and provides students with opportunities to actively engage in food experiences and to develop positive lifelong eating practices. The specific aims of the programme are to:

- encourage fun, flavour and texture through food experiences that engage all the senses;
- model good food choices without resorting to food pyramids or labels of “healthy” or “unhealthy”;
- reinforce techniques repeatedly, thus providing children with the confidence to plant seeds or cook simple dishes at home;
- plan menus featuring the fresh, seasonal produce growing in the garden;
- use ingredients at their peak—seasonal herbs, crisp veggies, fresh fruits;
- expand culinary horizons by presenting food-related cultural differences as fascinating rather than strange;
- expand vocabularies for describing foods, flavours, textures, plants and processes;
- introduce the notions that food should be delicious and the cooking of fresh fruit and vegetables should be timed with great care; and
- have the children enjoy coming together at the end of the cooking process to share meals around the table.

Building and maintaining an organic school garden are central to this programme. Students are actively involved in the growing and harvesting of produce such as vegetables, fruits and herbs. As well as requiring the physical maintenance of the garden, the programme incorporates classroom learning activities across a range of curriculum areas. In the kitchen, students learn to prepare a range of dishes that incorporate their harvested produce. They finish each cooking session by enjoying a shared meal time. (Chapter 15 of this book provides more detailed coverage of this topic.)

CONCLUSION

Health and physical education for sustainability is firmly embedded in the new Australian Curriculum, with the cross-curricular priority of sustainability, a welcomed alignment with current and ongoing concerns over the health and wellbeing of individuals. HPE for sustainability is most overt in those parts of the Australian and New Zealand curriculums pertaining to health education. The intersections of physical, social, emotional and spiritual dimensions of health development evident in this educational provision highlight the complex interactions of approaches to teaching health within a sustainability framework. The whole-school approach is also well supported through the concept of health promoting schools. In this chapter, the suggestion of using active transport and sustainable food choices as two means of teaching health for sustainability brings elements of the HPE curriculum

into alignment with the key aims of education for sustainability. Such approaches not only satisfy curriculum requirements of a strengths-based approach (ACARA, 2014) but also incorporate the holistic educational outcome of wellbeing that underpins the New Zealand Curriculum.

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