

INSIGHTS FOR TEACHERS

NMSSA Health &
Physical Education 2017



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Tel: 64 3 479 8561 • Email : nmssa@otago.ac.nz

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2017 Project Team	EARU	NZCER
Management Team	Sharon Young Albert Liao Lynette Jones Jane White	Charles Darr
Design/Statistics/ Psychometrics	Alison Gilmore Albert Liao Mustafa Asil	Charles Darr Hilary Ferral Jess Mazengarb
Curriculum/Assessment/ Task development	Sharon Young Jane White Catherine Morrison Neil Anderson Gaye McDowell	
Insights reporting	Catherine Morrison Sharon Young	Charles Darr
Programme Support	Lynette Jones Linda Jenkins James Rae Pauline Algie Lee Baker	Jess Mazengarb
External Advisors: Jeffrey Smith – University of Otago, Marama Pohatu – Te Rangatahi Ltd		

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The purpose of this report

This report is designed to support health and physical education (HPE) teaching in primary classrooms. It describes student responses to a selection of tasks from assessment of the HPE learning area carried out by the National Monitoring Study of Student Achievement (NMSSA) in 2017.

The document has four parts. Part one introduces NMSSA and the NMSSA HPE assessment. Part two looks at a selection of tasks and student responses focused on critical thinking about health-related issues. Part three focusses on student skills in movement related to two physical activity tasks. Part four discusses students understandings of well-being and examines an aspect of numeracy, and an aspect of literacy as demonstrated in two tasks.



PART 1

National Monitoring Study of Student Achievement health and physical education assessment

What is NMSSA?

NMSSA is designed to assess student achievement across the *New Zealand Curriculum* at Year 4 and Year 8 in New Zealand English-medium state and state-integrated schools. The study is carried out over five-year cycles and each year involves nationally representative samples of students from 100 schools at Year 4 and 100 schools at Year 8. The first cycle of NMSSA ran from 2012 to 2016. Health and physical education (HPE) was assessed in 2013 and again in 2017.



NMSSA

Wānangatia te Putanga Tauria
National Monitoring Study
of Student Achievement

The health and physical education learning area

The focus of the HPE learning area is on 'the well-being of the students themselves, of other people and of society through learning in health-related and movement contexts.'¹ At the heart of the learning in HPE are four underlying and interdependent concepts: hauora, attitudes and values, a socio-ecological perspective, and health promotion. These concepts, together with the four strands: personal health and physical development; movement concepts and motor skills; relationships with other people; and healthy communities and environments and their achievement

objectives, integrated with seven key areas of learning (mental health, sexuality education, food and nutrition, body care and physical safety, physical activity, sports studies and outdoor education) provide a framework for learning in HPE. Within this learning area students are encouraged to think critically and creatively, and to plan for and potentially engage in critical action related to issues that evolve from their own and others' lives and experiences.

¹ Ministry of Education (2007). *The New Zealand Curriculum*, p. 22.



The NMSSA health and physical education assessment

In developing the NMSSA HPE assessment three sets of tasks were designed. One set of tasks focused on students' achievement related to critical thinking. A second set of activities focused on students' learning in movement. The final assessment focused on students' understanding of well-being.

Tasks were designed to assess multiple dimensions of HPE. For example, a critical-thinking task might focus on the students' ability to:

- recognise stereotypes
- think critically about the underlying message of a story
- take and justify a position about the message
- suggest strategies to promote personal well-being in relation to the message.

In a learning-through-movement task students might:

- participate actively in a game
- move in a range of ways
- share their strategic thinking
- evaluate their strategies
- identify their own and others' strengths and areas to develop
- provide specific feedback to a peer.

The well-being task invited students to share their ideas about factors that contributed to their health and well-being.

Students participated in these tasks by means of three different assessment approaches. These included:

- Short written responses to open-ended questions
- One-to-one interview with a teacher assessor
- Team-based movement activities where students participated in pairs or groups of four.

Students interacted with a range of stimulus material including video-clips (advertisements, news articles, human interest items), fictional narratives, photographs, and physical education equipment, before sharing their ideas in written or oral form. Movement tasks were game and play based.

Care was taken to create tasks that were accessible and engaging for all students while encouraging them to think critically about issues as they impacted on the students themselves, on others and on society. Questions were designed to allow for a range of responses, from simple to sophisticated.



The NMSSA health and physical education scales

Combined results from the two sets of assessment tasks enabled NMSSA to create two scales of achievement to describe the kinds of things students could do in HPE.

These were:

1. Critical Thinking in HPE (CT) scale (p. 7)
2. Learning through Movement (LTM) scale (p. 8)

The CT and LTM scales each comprise a numerical scale on the left, and bands of descriptors to the right (see pp. 7–8). Each band of descriptors should be viewed as a bundle – that is, they are not hierarchical within the band, but instead together illustrate the levels of thinking or movement skills that students at a particular level would typically be able to demonstrate.

NMSSA Critical Thinking in Health and Physical Education (CT) Scale

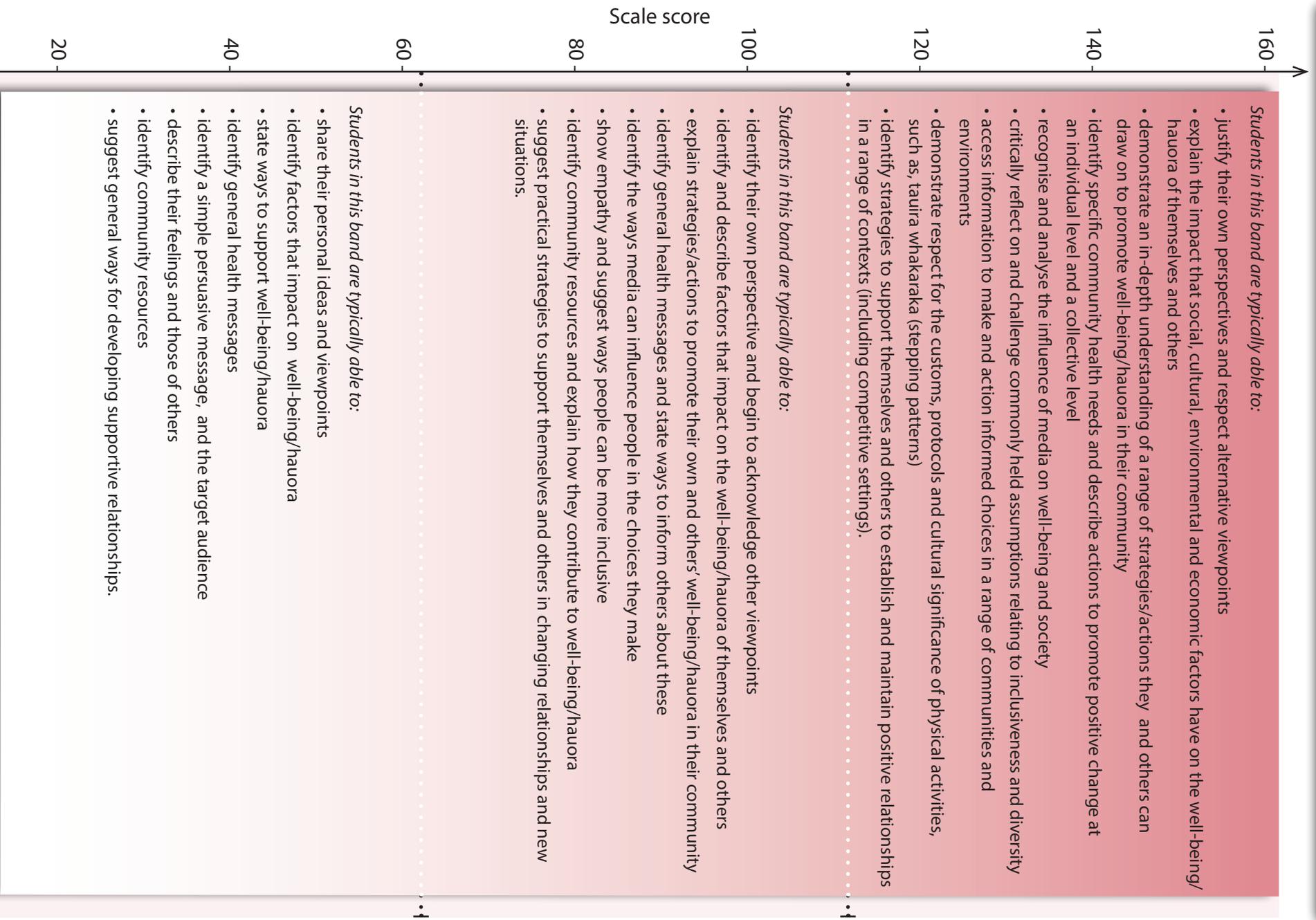


Figure 1: NMSSA Critical Thinking in HPE (CT) Scale

NMSSA Learning Through Movement Scale

Movement skills, Strategies, Creativity, Teamwork, Perceptiveness

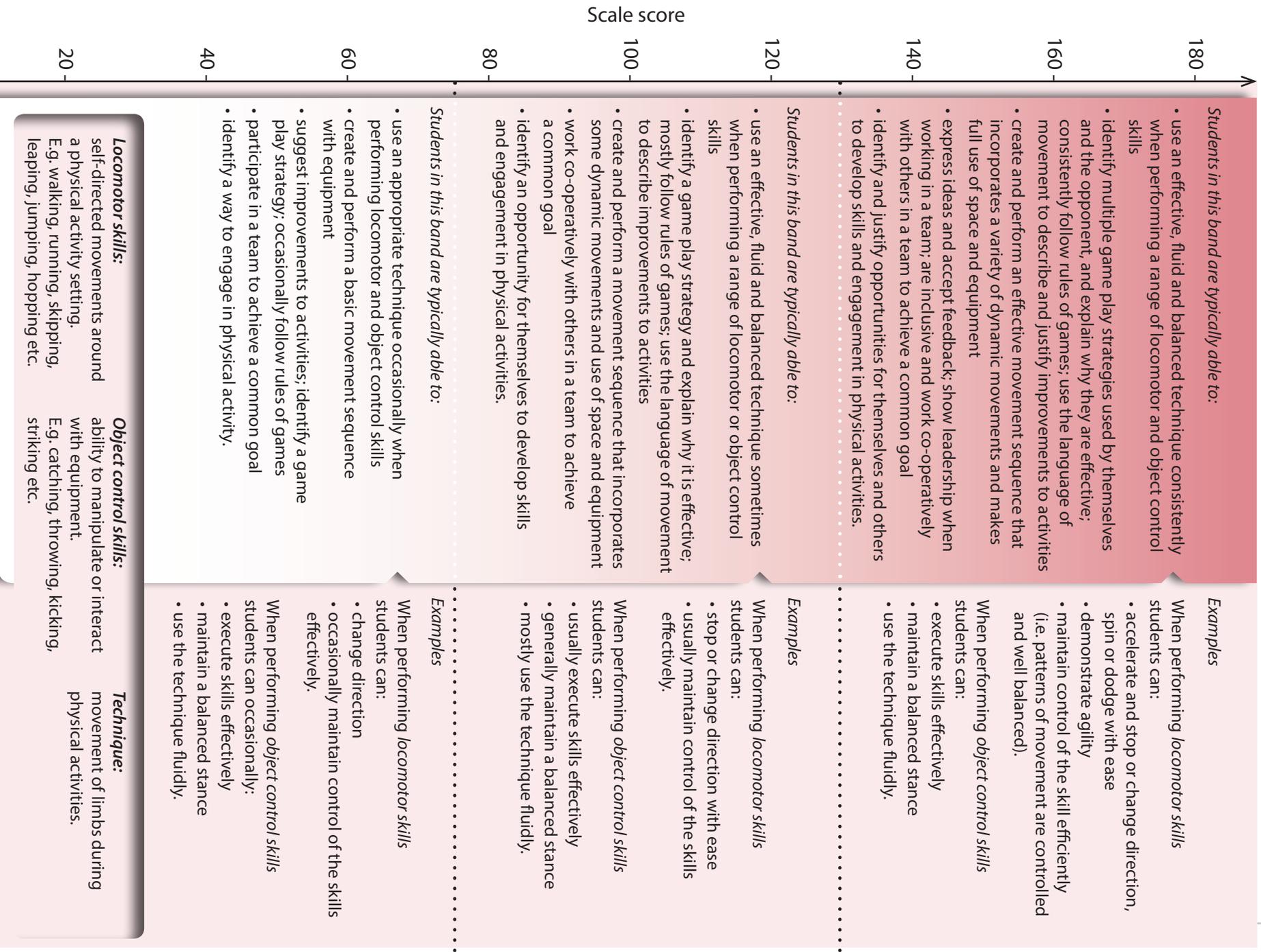


Figure 2: NMSSA Learning Through Movement (LTM) scale.

How did the students do on the health and physical education assessments?²

Figures 3 and 4 show how students achieved on the 2017 NMSSA Critical Thinking in HPE (CT) and Learning Through Movement (LTM) scales.

The 2017 study found that on the NMSSA CT assessment:

- most students in Year 4 were achieving at or above level 2 curriculum expectations
- a third of students in Year 8 were achieving at or above level 4 curriculum expectations.

On the LTM assessment:

- almost two thirds of the students in Year 4 were achieving at or above level 2 expectations
- just under a half (45 percent) of students in Year 8 were achieving at or above level 4 expectations

On average and at both year levels girls scored higher than boys on the CT scale and lower on the LTM scale.

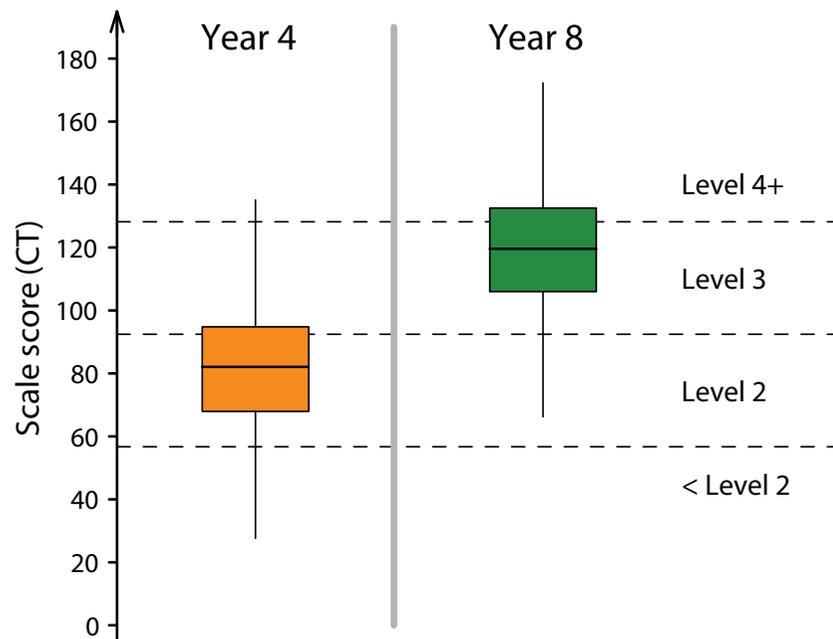


Figure 3: Distribution of scores on the Critical Thinking (CT) scale

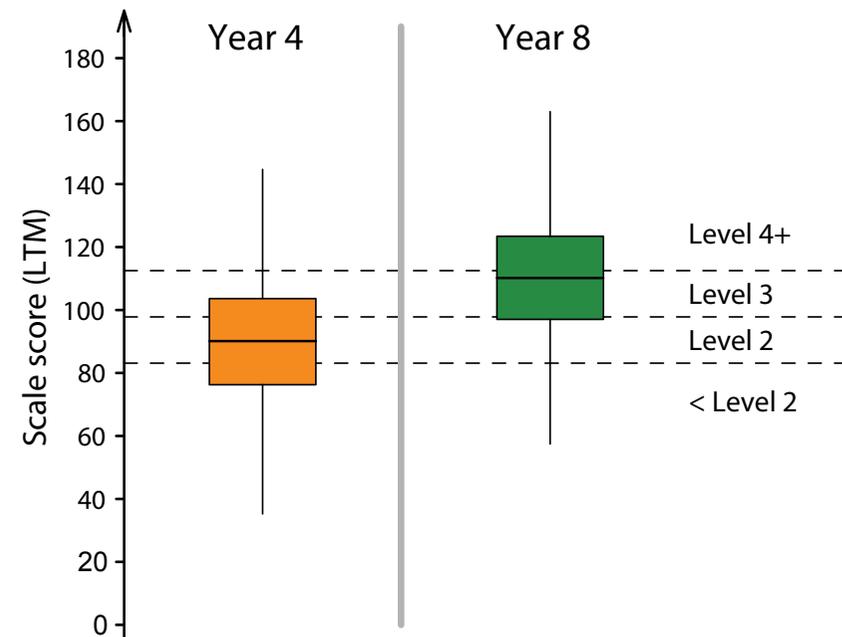


Figure 4: Distribution of scores on the Learning Through Movement (LTM) scale

² For a full description of the results refer to *NMSSA Report 16: Health and Physical Education 2017 – Key Findings*.



PART 2

Critical thinking in health and physical education

Health and Physical Education in the New Zealand Curriculum (1999) defines **critical thinking** as ‘examining, questioning, evaluating, and challenging issues and practices’ and **critical action** as ‘action based on critical thinking’ (p. 56).³ These ideas were expanded to include creative thinking and, together, these dimensions formed the basis of a critical thinking framework which contributed to the development of the Critical Thinking in HPE (CT) scale, and underpinned this aspect of the assessment programme.

The following descriptors⁴ were developed by an expert panel of teachers and HPE educators. They may be helpful as a reference for classroom teachers.

Critical thinking includes thinking about:

- *self and others*: understanding different perspectives and points of view relating to health and well-being (including inclusiveness and diversity), justifying one’s opinions and attitudes
- *information*: examining, analysing, critiquing and challenging information
- *society*: understanding the impacts of the (social, environmental, economic, political, cultural) determinants on well-being.

Critical action includes action for:

- *self*: an understanding of strategies and the ability to manage healthy lifestyles and relationships, risk and resilience
- *self and others*: the ability to plan and engage in health promotion to bring about change as individuals and collectively.

Creative thinking supports and enhances well-being for oneself and others and includes:

- an understanding of visioning and big picture thinking
- the ability to engage in problem solving and finding solutions
- an ability to express oneself through movement and to interpret the movement of others.

³ Ministry of Education (1999). *Health and Physical Education in the New Zealand Curriculum*.

⁴ NMSSA Report 3: *Health and Physical Education 2013 – Key Findings*, p. 13.



The set of descriptors links closely to the Key Competencies described on pages 12–13 of the New Zealand Curriculum (2007). These competencies are woven through the NMSSA assessment tasks.

The following table shows the relationship between the competencies and the NMSSA framework.

Table 1: Key competencies as they are enacted in NMSSA HPE (health focus) assessment

Key Competencies	In NMSSA HPE this includes:
Thinking	Thinking critically and creatively; reflecting, evaluating.
Managing self	Engaging in critical thinking and action in regard to developing strategies to manage personal well-being.
Relating to others	Understanding others' perspectives, and developing abilities to manage and enhance positive relationships. Working together to engage in health promotion.
Participating and contributing	Building health promotion strategies and a sense of belonging through engaging in critical action.
Using language, symbols and texts	Understanding how symbols, tools, and texts are used to communicate health information and ideas (for health and movement purposes).

The Playground

Key areas of learning (NZC): Physical Activity; Mental Health
NMSSA focus: Critical thinking / Critical action
Assessment approach: One-to-one interview

The Playground task was administered to Year 4 and Year 8 students as part of a one-to-one interview. The students watched television footage of the opening day of a new playground. The footage captured children's reactions to the playground, and showed people happily playing on a range of innovative play equipment. The opening was well patronised and, as a result, the playground was noisy and crowded.

This multilayered task enabled us to investigate students' ability to:

- think critically about the benefits of play for children and their families
- propose ways to act supportively in such an environment
- critically reflect on the limitations of the playground and the need to be inclusive
- evaluate strategies for individual and collective critical action.





What did we want to find out?

Community places such as playgrounds offer opportunities for children, whānau and communities to gather together in an informal setting. Play is an unstructured, enjoyable physical activity, which is particularly relevant for younger children. We were interested to find out if the students would recognise and acknowledge the value of play and be able to describe a range of benefits play might have for people's well-being.

Mental health is a key area of learning in the HPE curriculum. Students require a range of learning opportunities in mental health that include opportunities to develop, 'knowledge, understandings, and skills to support themselves and other people during times of stress, disappointment, and loss'.⁵ We were interested to find out whether they could demonstrate care, concern and empathy by describing supportive strategies to help others who were not comfortable in the busy playground environment.

We were also interested to find out whether the students would acknowledge the rights of all people to be able to access and use community spaces and equipment, and whether they would be able to evaluate ways collective action might be generated to encourage change. The second set of questions focused on students' understanding of the responsibility held individually and collectively for inclusion.

Task instructions

The video shows some children playing at a new playground.

As you watch, think about what playing in a playground does for children, whānau and communities.

Interview questions – Part 1

- What might playing in a playground do for children, whānau and communities?
- What could you do to help children who thought it was scary, noisy and crowded?

A dad felt disappointed because there was not much his daughter, who is in a wheelchair, could do there.

Watch the video and listen to how he feels.

Interview questions – Part 2

- Why should playgrounds have things for children with disabilities?

The dad wrote a letter to the city council, and used social media to get his message across.

- Why would writing a letter to the council be a good idea?
- Why would using social media be a good way for him to get his message across?

⁵ Ministry of Education (1999). *Health and Physical Education in the NZ Curriculum*, p. 37.

How did students respond?

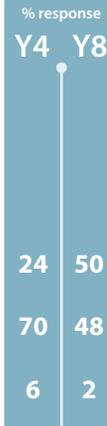
Interview questions – Part 1

1. What might playing in a playground do for children, whānau and communities?

Deeper thinking, which may relate to interaction with others: it's affordable, a place to meet; families can get together and all have fun

General reasoning: it's fun, you're outdoors

Unsure



Comments:

Positive aspects of a playground as a place to have fun, get fresh air, and be in a safe play environment were identified by three quarters of the Year 4 students and half of the Year 8 students.

Year 8 students in particular also saw the value of the playground as a place to connect socially – as a family, with friends or just with other people.

It's good for families and children because it helps them bond relationships, find new friends and stuff like that and it helps the parents because a lot of kids these days sit on phones and devices and so it is something different. Helps them do other stuff and get outside and stay healthy.

Y8

Anyone can go on it – it's for all ages. I think even parents would like it.

Y4

It's heaps of fun – there's enough room for everyone to run around and play.

Y4

It looks safe and will keep you busy for a long time.

Y8

It brings them altogether. Parents can talk and kids can play together.

Y8

The following Year 8 response demonstrates a more sophisticated understanding that economic factors influence people's choices and behaviours related to health and physical activity

It's great for giving your children exercise so it's... even if you don't have enough money to afford things like that at home you can just go and have fun and play.

Y8

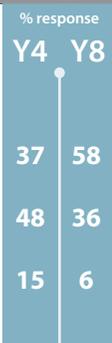
This response shows a student's understanding of the role of the council as well as the importance of public/community spaces in inner city living.

It's great to have a public place - it's always great to have places where the people in the community can hang out, like - I think that's definitely part of what the council takes into consideration when they're building things like parks and playgrounds. I think that the playground is definitely a service to the community because these families can go there and kids can have fun and play with their friends and it makes the community a much better environment if you're living in an apartment...

Y8

2. What could you do to help children who thought it was scary, noisy and crowded?

- Suggests two practical ideas 37 58
- Suggests one practical idea: play alongside them and show them it's fun 48 36
- Unsure 15 6



Comments:

Almost all of the students in Year 4 and Year 8 were able to identify at least one practical idea to support others. The most common suggestions were: making a friendly approach to an unhappy child; playing alongside; and providing encouragement. Other ideas included finding less busy spots to play and even venturing to a different playground.

The following typical examples show there was little difference between the Year 4 and Year 8 responses.

The first two responses show concern for the emotional well-being of the child and an attempt to find out what the problem is. They also suggested finding adult support as a strategy to solve the problem.

Well... I could ask them what's up? What is wrong? And then maybe ask them if you want to play there or not want to play there. If they want to ... you know ... go to a quieter playground, go to one that's not so scary just a normal playground with a swing, slide, jungle gym and stuff. Or just find their older brothers or sisters or they might just want to sit with their Mum and Dad.

Y4

If I find a little girl crying ... if I put myself in that situation my first instinct would be to ask 'Are you OK? What's the problem? Can I find your parents for you?'

Y8

The following two students provide a scaffolding solution – 'Try it out – I'll support you'.

If they're scared of heights go up with them and go down beside them.

Y8

By saying 'Do you want to come with me together?' Go on the small stuff before you go on the big stuff so you get used to it.

Y4

3. Why should playgrounds have things for children with disabilities?

Response relates to inclusion. Everyone has a right to join in; the park needs to recognize the needs of others

Unsure

% response

Y4 Y8

55 84

45 16

Comments:

Eighty-four percent of the Year 8 students and just over 50 percent of Year 4 students considered that playgrounds should cater for the needs of children with disabilities.

Year 8 students were more likely to focus on children's rights in their responses.

Year 4 students were more inclined to focus on what the children were missing out on.

They're still kids and they [have] a right to run around and play, be happy and interact with other children.

Y8

They're equal. They're still kids and they have a right to play on playgrounds and enjoy it like everyone else.

Y8

Because it gets them to have more fun like it's really fun for people with no disabilities so if they made it fun for children with disabilities everyone would be having fun which is what everybody wants.

Y4

Because so they don't feel left out - they can feel included and they can have fun.

Y4

4. Why would writing a letter to the city council be a good idea?

Understands the role of the council as a body that can take action/
has responsibility

Unsure

5. Why would using social media be a good way for him to get his message across?

Potential to mobilise large numbers:
recognises the benefits of collective action

Unsure

% response

Y4 Y8

62 82

38 18

64 91

36 9

Comments:

Year 8 students were also more likely to recognise the responsibility of a city council as a governing body to take action. However, more than half of the Year 4 students also noted the council's power to make change. Most students could also recognise the benefits and efficiencies afforded by canvassing support for collective action through social media.

A letter is bound to do something but Facebook gets to more people.

Y8

Social media is like a big web - especially Twitter.. it's designed for something to spread which is not always good. But more people and more people see it and might decide to write letters to the city council.

Y8

Year 4 students as well were very familiar with communication modes available to users of social media.

Because everybody, like... most people who have phones go on social media, Facebook, Facetime, all those things that you can get messages across and they will see the messages and my Mum always goes on Facebook. She sees all these messages so my Mum would probably see that message if he put it out there and the council probably uses social media as well so the council would use that as well probably.

Y4



What did we learn?

Students at both year levels shared the benefits of playgrounds within their communities. They noted that playgrounds contributed to positive, happy experiences and feelings of well-being.

When considering the playground as an enjoyable place for all, Year 8 students (84 percent) spoke about inclusivity and children's rights.

Just over half of the Year 4 students understood and referred to inclusion. The other 45 percent appeared not to recognise the issues, and were more inclined to suggest playing elsewhere, where it would be safe.

Students also recognised the positive role of social media when advocating for challenging issues of equity.

Implications for health and physical education teaching and learning

Choosing a context for teaching and learning in health education will depend on the needs of students within each specific school community. The health education programme should be culturally responsive and meaningful for students. The local curriculum should be unique and responsive to the priorities, preferences and issues of the community and its people.⁶ In this task, the playground became a context for developing critical thinking about issues of well-being, belonging to communities and more challenging aspects related to fairness, inclusiveness and advocacy.

There could be opportunity to have students scrutinise their own school playgrounds and examine the issues of equitable opportunities for play. They could ask:

- Who gets to play where and why?
- Who is advantaged by that?
- Who is disadvantaged?

Playgrounds could also be sites where students have opportunities to develop fundamental movement and interpersonal skills. Teachers can effectively use the playground as a curriculum space, as well as a break space.

Useful references / resources

SportNZ (2017). *The importance of play (Principles)*. <https://sportnz.org.nz/assets/Uploads/attachments/Sport-New-Zealand-Play-Principles-Nov-2017.pdf>

⁶ <http://nzcurriculum.tki.org.nz/Reviewing-your-curriculum/Leading-Local-Curriculum-Guide-series>.

Is this OK?

Key area of learning (NZC): Sexuality Education⁷; Mental Health

NMSSA focus: Critical thinking

Assessment approach: Short answer, pencil-and-paper

To set the scene for the task,⁷ *Is this OK?*, the students listened to a letter written to a toy manufacturer by 7-year old Emily, and then viewed a related news story. Emily was unhappy that the manufacturer presented toys, designed for use in a construction set, in stereotypically gendered ways. Male characters were presented as workers, adventurers and heroes. The female characters were depicted relaxing, shopping and sunbathing. The students were asked to consider possible reasons for this and to state their opinion on whether this was 'OK'.

This task required students to think critically. To complete the task students needed to:

- consider an opinion expressed through a letter
- reflect on additional relevant information presented in a video clip
- consider their own position and justify it
- consider an alternative perspective (i.e. the manufacturer) and justify it.

What did we want to find out?

Societal and cultural influences shape the way society views gender and sexuality. As part of sexuality education, a key learning area in the HPE curriculum, students are asked to question these influences. Development of critical thinking skills is central to this process. In this task we were examining whether students could think critically to identify and challenge commonly held assumptions around gender.

Task instructions

Emily was unhappy because the manufacturers made boy characters working in jobs, having adventures and saving people. Girl characters were sitting, shopping and going to the beach.

Questions

- Why do you think the manufacturers made the characters this way?
- Is it ok to make them this way? (Circle YES, NO, MAYBE)
- Why do you think that?

Students wrote responses to the questions.

⁷ This task focused on gender stereotyping.

How did students respond?



Question 1

Why did the manufacturers make the characters this way?

Deeper reasoning connected to recognition of gender stereotyping by the company (the company believes that boys and girls have different roles; they are appealing to what they think boys and girls do)

General reasoning restating stereotype (boys have more adventures, girls like shopping)

Unsure

% response	
Y4	Y8
7	34
61	55
32	11

Comments:

Most of the students at both year levels indicated that the presentation of the male and female characters in the toy set reflected their own view of reality. Typical responses included:

because most girls in the world like shopping and stuff. Y4

Because thats what most girls like to do. And Boys just want to let their energy out. Y8

Girls are more suited doing these things and most girls prefer it over what boys do. Y8

More sophisticated thinking was evident in the responses that considered more explicitly why the manufacturer had made the decision to represent the characters that way, or in responses that tried to explain what might have influenced the manufacturer's thinking.

Their minds say that girls should do more girly stuff and boys do more boy stuff. Y8

Because their being stereotypical Y8

~~Becc~~ Because that's how they see it in real life Y4

Because it is a common stereotype that has been ingrained in our society for years. Y8

Back in the day, society had lots of gender inequalities. Maybe nowadays, things have changed, but not a lot. We have this picture in our heads that boys are more courageous than girls, but this is not always the case. Y8

Some Year 8 students took a view that it was a deliberate marketing decision.

More girls think that shopping and hairdressing is more interesting than adventures and therefore more girl aimed products will be sold and they will earn more profit. Y8

Question 2

Is this ok?

Yes 28 12

No 44 60

Maybe 28 28

Why do you think that?

Deeper reasoning. Response recognises and challenges stereotyping and discrimination 7 40

General reasoning: e.g. YES - Because girls like going to the beach (accepting stereotypical representation);
NO - because girls like swimming with sharks too;
MAYBE - because some girls like adventures and stuff but others like going shopping and going to the beach 46 41

Non specific response 47 19

Comments:

Seven percent of Year 4 students showed the beginnings of deeper thinking in their responses to this question. These students included simple ideas of equality, and fairness in their reasons.

% response

Y4 Y8

2. a) Is this okay? (circle your answer) YES NO **MAYBE**

b) Why do you think that?
Because girls are equally the same as boys so maybe they should make girl characters more adventures Y4

Most however provided general reasons for their opinion, focusing on what girls and boys like to do, including accepting the stereotype.

2. a) Is this okay? (circle your answer) YES **NO** MAYBE

b) Why do you think that?
because girls like going on adventure as well as boys. Y4

2. a) Is this okay? (circle your answer) **YES** NO MAYBE

b) Why do you think that?
Because they copied what they do in real life. Y4

2. a) Is this okay? (circle your answer) YES NO **MAYBE**

b) Why do you think that?
because boys are probably fine with it but girls not so much Y4

2. a) Is this okay? (circle your answer) YES **NO** MAYBE

b) Why do you think that?
because girls are should be treated the same Y4

Many Year 8 students gave similar responses with most stating that girls should be represented in active and interesting pursuits, as boys were.

2. a) Is this okay? (circle your answer) YES NO MAYBE
- b) Why do you think that?
I think that some girls are really into adventurous stuff like the boys and not just the "girly" stuff designed for girls
- Y8

2. a) Is this okay? (circle your answer) YES NO MAYBE
- b) Why do you think that?
Girls can do LOTS of things that boys can do. Although they are not as strongly built or anything they can do and want to do more. Just because we are female doesn't mean we just want to shop. Maybe we want adventures too
- Y8

Sixty percent of Year 8 students indicated that they did not think the representations were ok. Forty percent demonstrated deeper or more sophisticated thinking in their responses.

2. a) Is this okay? (circle your answer) YES NO MAYBE
- b) Why do you think that?
Because we live in a society which supports equality
- Y8

2. a) Is this okay? (circle your answer) YES NO MAYBE
- b) Why do you think that?
Because your gender does not affect what you like to do or what you are capable of.
- Y8

2. a) Is this okay? (circle your answer) YES NO MAYBE
- b) Why do you think that?
It should be different for everyone. It's not good to be stereotypical
- Y8

Some Year 8 students were concerned at the underlying messages carried by the stereotypical toys.

2. a) Is this okay? (circle your answer) YES NO MAYBE
- b) Why do you think that?
Because society shouldn't be limiting girls to do certain things, they should be able to do whatever they want.
- Y8

2. a) Is this okay? (circle your answer) YES NO MAYBE
- b) Why do you think that?
Because then young kids will think this is what they have to do when ~~you~~ ^{they} CAN be a stay at home dad or a working mum.
- Y8



What did we learn?

'Beliefs around gender are influenced by culture, religion, and social expectations, so there will be different attitudes, values, and beliefs within the classroom and within students' families and the wider community'.⁸ In this task it was evident in the responses that students have different views of the appropriateness of the ways gender is represented. Year 8 students appeared to think more critically and were more likely to challenge the assumptions related to gender than Year 4 students.

⁸ Ministry of Education (2017). *Sexuality Education for Curriculum Levels 1-2*, p. 34.



Implications for health and physical education teaching and learning

Ability to critically reflect on and to challenge common assumptions develops as students notice inequities, consider the impact for themselves, others and society, and form and justify opinions. Teacher questioning is key.

'Explore and challenge gender expectations to support an inclusive environment' is recorded as a level 2 goal in the resource *Sexuality Education for Curriculum Levels 1-2*.⁹ This resource, along with its companion *Sexuality Education for Curriculum Levels 3-4*, provides excellent support for teachers. A list of discussion prompts designed for Level 3-4¹⁰ could be adapted (as suggested here) for younger students to encourage critical thinking. For example, teachers could use the following prompts to discuss illustrations in a picture book.

- Who is busy doing things?
- Who is just watching?
- What are they wearing?
- How are they behaving?
- What messages are their behaviours communicating?
- What qualities are valued? (for example, strength, attractiveness, intelligence)
- How realistic are the images?

The New Zealand Health Education Association (NZHEA) has produced a very useful resource for teachers called *Indicators of learning progression for Sexuality Education in The New Zealand Curriculum* (2016). This resource helps teachers unpack the learning intentions for sexuality education from the Ministry of Education's *Sexuality Education: a guide for principals, boards of trustees and teachers* (2015) and will support schools to design sexuality education programmes. These guidelines include learning intentions for sexuality education outlining what students should know or be able to do at each level. Supporting students to reflect on and challenge commonly-held assumptions also requires teachers to ask questions of their own assumptions and what messages they may reinforce in their practice, language and activities.

Useful references / resources

<http://www.ero.govt.nz/publications/promoting-wellbeing-through-sexuality-education/>

<http://health.tki.org.nz/Teaching-in-HPE/Policy-guidelines/Sexuality-education-a-guide-for-principals-boards-of-trustees-and-teachers>

<http://health.tki.org.nz/Teaching-in-HPE/Policy-guidelines/Relationship-Education-Programmes-Guide-for-Schools>

<http://health.tki.org.nz/Key-collections/Curriculum-in-action/Sexuality-education-for-curriculum-levels-1-4>

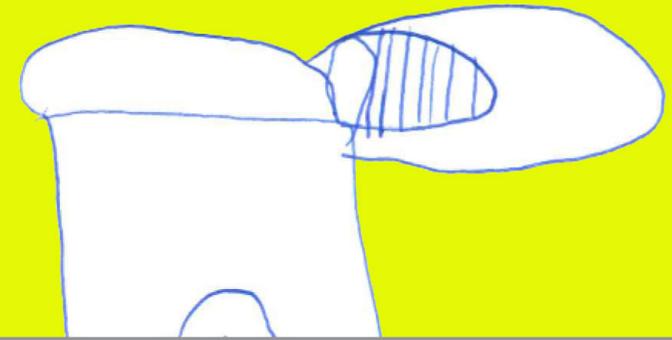
<https://healtheducation.org.nz/wp-content/uploads/2018/11/g-feb-2016-nzhea-seg-indicators-of-learning-progression-for-sexuality-education.pdf>

⁹ Ministry of Education (2017). Me and other people - Challenging gender expectations. *Sexuality Education for Curriculum Levels 1-2*. p. 34.

¹⁰ Ministry of Education (2017). Me and the world - Challenging stereotypes. *Sexuality Education for Curriculum Levels 3-4*. p. 41.

An Important Message

Key area of learning (NZC):	Mental Health; Body Care; Physical Activity
NMSSA focus:	Critical thinking / Critical action / Creative thinking
Assessment approach :	One-to-one interview



Taking action to foster supportive physical and emotional environments is key to the health promotion underlying concept of the HPE curriculum. This interview task invites Year 4 and Year 8 students to identify an issue that they think is significant for their school community, suggest a relevant message and discuss ways they and others might take action to ensure the message is shared. It requires thoughtful selection of strategies and actions that students can use to promote the well-being of themselves and others. While it is not possible to assess students' actual critical action within the NMSSA programme, students' ability to identify and suggest possible actions can be explored.

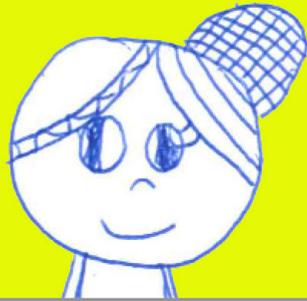
This open-ended task allowed students to talk about an issue that they thought was significant for their community. It provided an opportunity for students to show they could:

- recognise and explain a community need
- recognise ways to take action to promote community well-being
- suggest communication strategies.

What did we want to find out?

We were interested to find out how well the students were able to demonstrate critical thinking when identifying and justifying their chosen issue. We were looking in particular for a strong connection between the issue or message and evidence of the specified need through the students' observations or with reference to their school and community.

We were also interested to find out what sort of strategies the students could suggest that other people within the school community could do to support dissemination of the message. We wanted to know whether they could suggest either (or both) individual or collective actions related to getting their message across.



Task instructions

There are lots of health messages in our school community to help us keep ourselves safe and well. For example, 'helping each other' could be one message, and 'wearing sunhats in the playground' could be another message .

- Decide on ONE message you think is important for your school community.
- Draw pictures, use symbols and words to give this message to your school community.
- You have a few minutes to record your ideas.

Interview questions

1. What is it that you are trying to tell people about?
2. Why is this an important message for people in your school community?
3. What are some of the things you or people in your school could do to get this message across?



How did students respond?

Questions 1 & 2

What is it you are trying to tell people about?

Why is this an important message for people in your school community?

Explains message and links rationale to a specific school/ community need

Explains message and provides a general rationale

States a message but unable to provide a reason

Unsure

% response

Y4 Y8

13 32

73 63

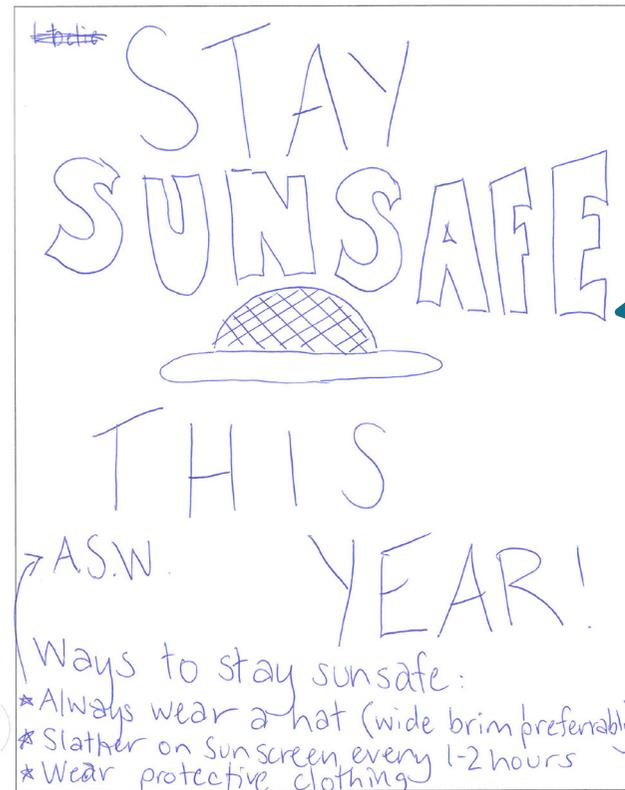
12 5

1 0

Comments:

Year 8 students were more likely to justify their message through linking it with something they had noticed in their school than Year 4 students.

The following examples show the difference between one Year 8 and one Year 4 student in the depth of reasoning. The Year 8 student rationalises the choice of message based on what he or she knows about the harmful outcomes of sunburn, on scientific knowledge of the ozone layer, and on observed behaviours of children in the school. This student is able to transfer learning from one context to another. The Year 4 student on the other hand, gives a general justification.



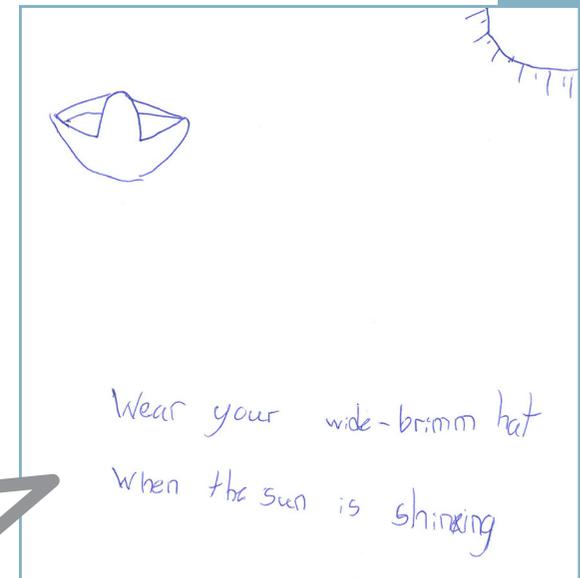
I'm telling people to stay sunsafe this year especially in New Zealand there's a hole in the ozone layer so you have to be extra careful. ...Because at my school terms one and four are the hottest terms. We have to wear hats but often the kids don't take it too seriously and they are slack or just decide not to bring their hat and we have to have them play under a shady tree ... I think it's important that we protect our skin and try to avoid melanoma.

Y8

Wear a wide brimmed hat when the sun is shining or you will get sunburned...

So you don't get sunburn. So you don't get sick or too hot.

Y4



Many students selected a relationship focused message. The first example shows that a school's mission statement has made an impact on this Year 8 student's choice of an important message. The Year 4 message sounds more personal; the perspective taken is based on observation.

In these examples both students are able to provide a justification for selecting their message.

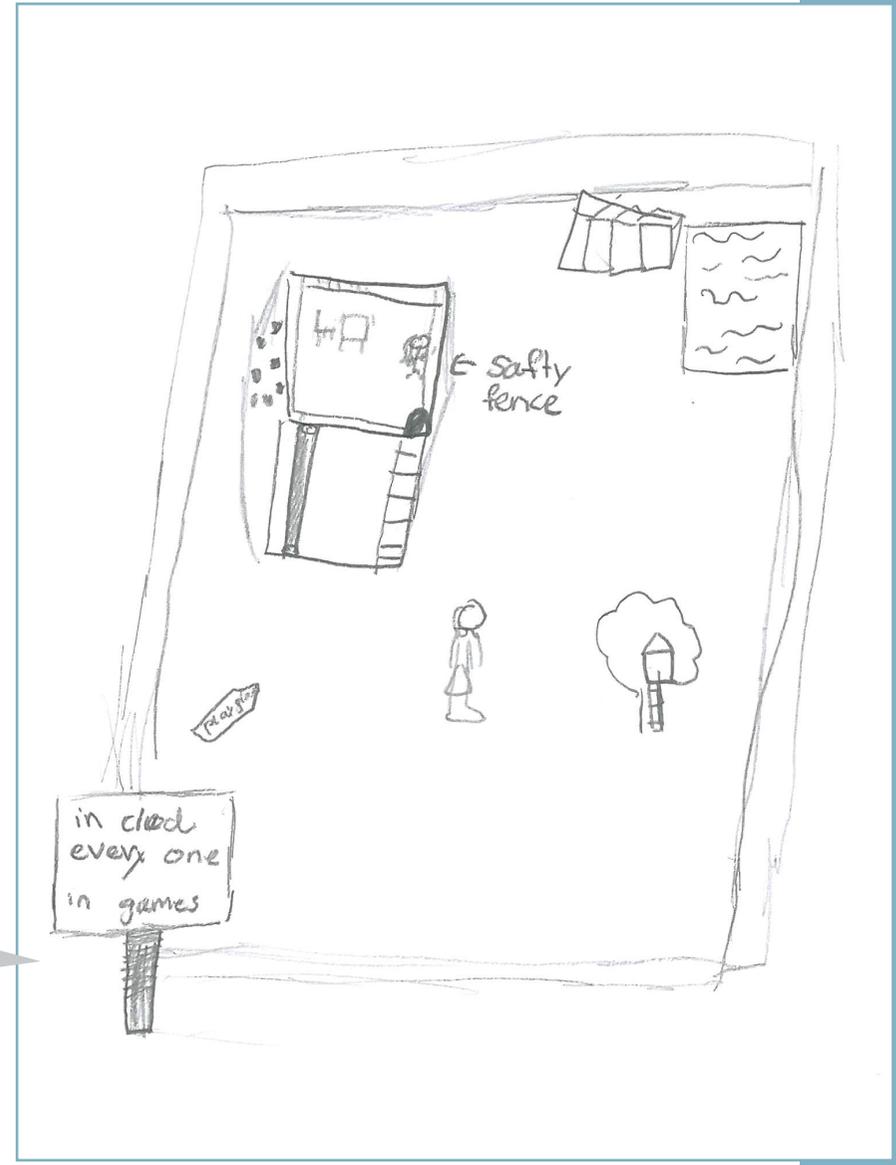
- Friendly people
- Sunhats, sunscreen
- Healthy eating
- **Helping each other**
- Dogs on leads
- Bully free

I have chosen helping each other - being friendly... Because it's part of our mission statement - to be a caring and friendly school - and it's better to be nice to each other

Y8

My message is include everyone in games.... because lots of people feel like nobody wants to play with them and feel sad and all that ... and that's happening quite a lot at our school.

Y4



Question 3

What are some of the things you or people in your school could do to get this message across?

Identifies specific targeted strategies e.g. adults could model desired behaviour for students.

Identifies general strategies for getting message to appropriate groups (e.g. put the message into a newsletter for parents)

Suggests a non-targeted strategy or action i.e. does not identify audience

Unsure

% response

Y4 Y8

9	23
66	67
23	9
2	1

Comments:

Telling people about it (talking to peers, teachers and parents) was a commonly suggested strategy for action, as was making and displaying posters. The majority of students at both year levels relied on these simple, general actions to communicate their message. For example:

- o Put signs in the playground to say 'remember to play with everyone'.
- o Maybe talk about it.
- o Talk to people when they're not including others (he's already helping).
- o Parents could talk to their kids

Y4



Tell people and tell them to spread the message. Say the message over a loudspeaker (although that could be a nervous thing for me).

Y4

Principals could notify parents about healthy food in a newsletter (although this Yr 8 student cautioned that it was important to consider the impact on the community and to have a realistic goal – because healthy food is expensive).

Y8

A small number of students suggested other strategies, for example, inviting in a guest speaker to reinforce the message, or modelling desired behaviour e.g. wearing a sunhat.

What did we learn?

The students identified an interesting range of messages for their schools. These included :

- Help each other
- Look out for texting drivers
- Eat healthy food
- Be inclusive in the playground
- Keep healthy – wash your hands
- No drugs, no knives
- Look after the environment
- Be sunsmart
- Use the pedestrian crossing
- Don't bully (including cyber-bullying)
- Stop smoking
- Respect people
- Keep in shape
- Encourage friendship

There appeared to be a slight difference in the sorts of messages selected by Year 4 students and those selected by Year 8 students. Both age groups proposed messages around healthy food, being sunsmart and taking care of each other. However, Year 8 students included anti-smoking, anti-violence, anti-alcohol and anti-drugs messages. Students were keen to talk about the issue they had identified. They displayed interest in health-related ideas, and frequently demonstrated relevant knowledge of the issue – for example, the impact of sunburn, or the benefits of not drinking alcohol.

Ninety-nine percent of students were able to think of a message, however it proved to be much more challenging to relate the issue or message they chose to the specific circumstance of their own school or community.

When responding to the contextual questionnaire¹¹ that accompanies the NMSSA assessment programme, about a third of students at both Year 4 and Year 8 noted that they had opportunities to 'talk about the meaning of health messages in their classes'. Around half of the students said they had opportunities in class 'to plan ways to keep our class and school community healthy and happy'.

Implications for health and physical education teaching and learning.

Students need opportunities in health education to make decisions about what is relevant and meaningful in their lives. They also need to translate this into active learning through linking their ideas to information, data, observation, or big-picture ideas.

Teachers can scaffold students' learning by identifying and examining messages that are related to or that could impact on the well-being of their school community. Understanding the authentic and specific reasons a particular message is significant for a community can provide a catalyst for action. Promoting a message as a way of taking action is one way students can participate and contribute to change.

Students could develop understanding of the various actions required to advocate for change to support the well-being of groups or communities by, for example, engaging in an investigation about the use of billboards, as in the scenario below.

EXAMPLE SCENARIO

Students are concerned about the large number of fast-food billboards near the schools in their area, as well as the advertising of the fast-food outlets on the main roads that the students have to travel along to get to school.

- What group might be concerned about this issue? Why are they concerned?
- What changes do they want to see?
- Who is responsible for/ who is in a position to make these changes?
- How could this group gather the information to show there was widespread support for the change the group is seeking?
- Who would they present their case to? Why to this person/ these people or organisation?
- How would the group know their actions had been successful?
- If the group was unsuccessful, what else could they do?

¹¹ NMSSA Report 16: Health and Physical Education 2017 – Key Findings, p.43.



PART 3

Learning in, through and about movement

Contexts for movement tasks were taken from three of the key areas of learning for HPE: physical activity; outdoor education; and sports studies. Students were assessed within movement contexts, on their ability to do things in, through and about movement, such as:

- develop and carry out complex movement sequences
- move in a range of ways
- strategise, communicate, and co-operate
- think creatively — express themselves through movement, and interpret the movement of others
- express social and cultural practices through movement.

A set of indicators was developed by the NMSSA team, in association with PE experts, to guide development and marking of the movement activities. These indicators were synthesised from the work of New Zealand researchers,¹² the Ministry of Education's *Curriculum in Action*¹³ series, HPE education in the New Zealand Curriculum, and various New Zealand resources for teachers.¹⁴ The indicators were built from the framework proposed by Ovens and Smith (2006) (see Table 3, p. 39) and included:

Technique (including locomotion, and object control)

- posture appropriate to the movement purpose
- efficient, fluent movements

Movement dynamics/effectiveness of actions

- controlled
- balanced and stable
- accurate
- quick

Tactics and strategies

- deliberate problem-solving decisions and actions to maximise performance
- adherence to rules of a game

Perceptiveness of physical activity environments

- perceive opportunities for action that the opposition or environment allows
- react and respond to game play
- anticipate opposition's behaviour

¹² Ovens, A. & Smith, W.(2006) Skill: Making sense of a complex concept. *Journal of Physical Education New Zealand*, 39(1), 72-82.

¹³ [Health.tki.org.nz/Key-collections/Curriculum-in-Action-series](https://health.tki.org.nz/Key-collections/Curriculum-in-Action-series).

¹⁴ <https://sportnz.org.nz/managing-sport/search-for-a-resource/guides/fundamental-movement-skills>; <http://www.athletics.org.nz/Get-Involved/Ad-a-School/Get-Set-Go>.



Adaptability/ creativity

- create new movements or movement sequences using equipment
- adapt to new movement environments
- think creatively about physical activity, physical resources, and physical activity environments

Teamwork, co-operation and communication

- work with other people in physical activity contexts
- accept others' ideas about movement
- communicate movement based ideas (including critique and analyses)

Note: These dimensions were further elaborated to provide assessment rubrics.

Tasks were designed to assess students' abilities in relation to physical movement, but were also intended to explore students' ability to strategise, to work creatively, co-operatively and competitively and to critically consider the effect of these on game participation. These movement activities also absorbed aspects of the key competencies.

As tasks were developed there was continuous cross-referencing of questions and rubrics with these frameworks and competencies.

Table 2 : Key competencies¹⁵ as they are enacted in NMSSA HPE (movement focus) assessment

Key Competencies	In NMSSA this includes:
Thinking	Creating and strategising, critiquing and reflecting when learning in physical activity contexts.
Managing self	Demonstrating self-motivation, and personal goal setting. Developing strategies for personal wellbeing.
Relating to others	Interacting with others in play and as part of a team. Understanding the impact of competition and co-operation on relationships. Working together and reflecting on personal responsibility to relationship building.
Participating and contributing	Active engagement with peers which contributes to sense of belonging. Connecting with others, contributing ideas and creating opportunities for others – working together and demonstrating leadership.
Using language, symbols and texts	Understand movement as a text or narrative. Interpreting and using movement to convey meaning. Expressing and interpreting social and cultural practices through movement.

¹⁵ Adapted from *Physical activity for healthy confident kids. Guidelines for sustainable physical activity in school communities.* SPARC MoE (2007), p.16.

Stop Ball

Key areas of learning (NZC):	Physical Activity; Movement Skills
NMSSA focus :	Locomotion / Tactics and strategies / Perceptiveness
Assessment approach :	Team, one-to-one interview

This task, *Stop Ball*, contributed to the in-depth assessment of Learning Through Movement (LTM). We selected *Stop Ball* for assessment purposes because it is a game that allowed for maximum participation and gave all children opportunities to use movement skills and apparatus. The game had to be safe and meet the needs of children with varying abilities. We included questioning throughout the game to ensure students were thinking, focused and reflecting on the movement skills and strategies they and others were using. For the purposes of NMSSA, we had obvious limitations in terms of space.

What did we want to find out?

There were three dimensions for assessment within this task. Firstly, we were interested in observing students and viewing their consistency and control of movements in a game context. We focused on the skills related to locomotion. Secondly, we wanted to see whether students consistently adhered to the rules of the game. Finally, we also wanted to find out if students could evaluate the success of their own movements and choices of strategies. We also asked them to observe and share what strategies their opponents were using within this game; this aspect of observing others was considered to be a more complex skill.

We drew on a framework suggested by Ovens & Smith (2006)¹⁶ to guide and understand the complexity of the concepts and skills required in game contexts. We referred to this framework when developing the tasks and rubrics to assess students' movement skills. Ovens & Smith (2006) suggested that within game contexts the skills that would be involved were:

- technical competence (patterns of movement)
- performance outcome (successful outcome of action or actions of individuals and/or groups of players)
- perceptiveness of the environment (reading of play, making sense of what is going on)
- tactics and strategy (appropriateness of actions within the specific game context)
- adaptability or creativity (adapting or creating as the situation demands) (p.77).

¹⁶ Ovens, A. & Smith, W. (2006) Skill: Making sense of a complex concept. *Journal of Physical Education New Zealand*, 39, (1), 72-82.



The task involved a group of four students. The teacher assessor set out the area for the game (Figure 5) and explained how the game was played. When all students understood the rules of the game, they played the game once and were asked to think about what strategies they (or the others) needed to use to win the game.

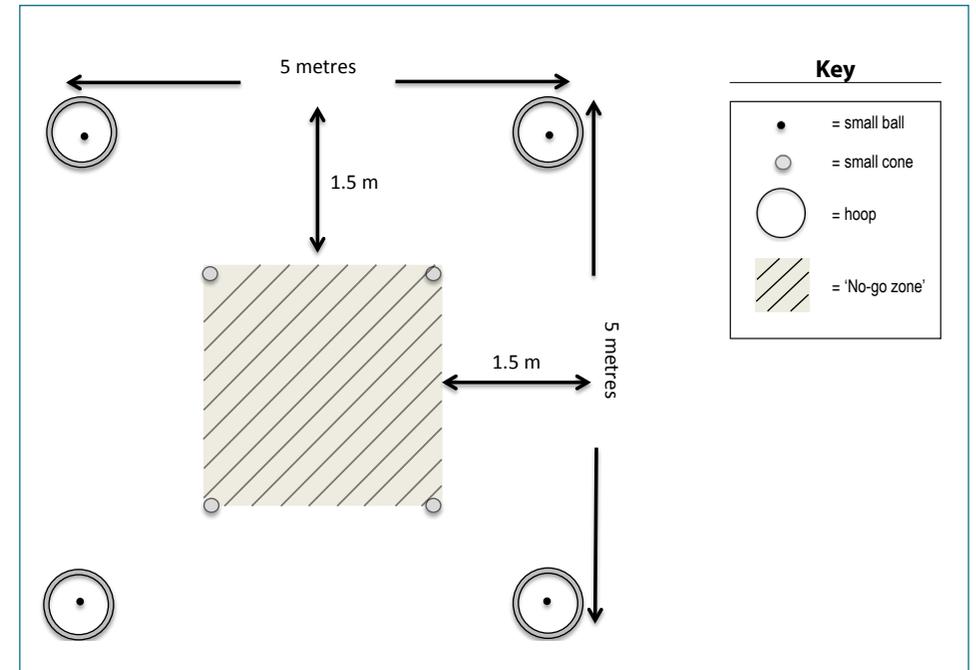


Figure 5: Play area for Stop Ball

How did students respond?

Game instructions

You are going to play a game called *Stop Ball*. You need to stay within the area marked by the hoops. You can't go inside the area marked by the cones – it is a 'no-go zone'. Stand beside a hoop.

There is a ball in your hoop. The aim of the game is to be the first player to have two balls in your hoop. Take one ball at a time from another hoop.

Go to the hoop and place in your own hoop before you go again. You cannot throw a ball into your hoop – you must place it in the hoop. You can take a ball from the left or right of you but not from the hoop opposite you.

When you have two balls in your hoop, stand in your hoop and call 'Stop ball' with your hands in the air.

When I say 'Go' you can start the game.

The students played the game until one student called 'Stop Ball'.

Now think about the strategies you need to use to win.

Students played the game two more times

Adaptation of the game

This time the aim of the game is to **empty** your hoop. Take one ball at a time from your hoop and place it in someone else's hoop. When you get back to your hoop and it is empty call 'Stop ball' with your hands in the air.

The students played the game until one student called 'Stop ball'.

Now think about the strategies you need to use to win.

Students played the game two more times

Interview questions

What strategies did you use to play *Stop Ball*?

Did they work?

Why/why not?

What strategies did the others use?

Dimensions assessed.

1. Locomotion

High range movement (Hips, knees, ankles bent consistently; constantly moving on balls of feet; efficient, fluid, balanced movements; able to change direction quickly; leans into direction of movement and is constantly ready)

% response

Y4 Y8

6 22

Mid-range movement

66 63

Low-range movement (e.g. upright stance; little flexibility in joints; extraneous movements when changing direction or gathering up the balls; movement often inefficient)

28 15

Comments:

All of the students invited to participate in the *Stop Ball* task did so. Most students at both Year 4 (72 percent) and Year 8 (85 percent) demonstrated mid to high range movements as they played the game.



2. Playing to the rules

	% response	
	Y4	Y8
Consistently follows the rules	63	66
Mostly follows rules	34	33
Doesn't follow rules	3	1

Comments:

The rules were explicitly explained to the students, and directions regarding the area of play were reinforced as students used their arms to point out the perimeter only movement, and to signal that they had completed the task. Students also had to place their balls in the hoops in a controlled manner. Most students consistently followed the rules – with about a third occasionally darting across the diagonals or calling out without the arm signal.

3. Tactics and strategies

	% response	
	Y4	Y8
High-range – able to identify two or more strategies (own and opponent's game play) and evaluate effectiveness	16	29
Mid-range - able to identify one strategy and evaluate its effectiveness	40	51
Low range – general strategies e.g. run fast, get to hoop quickly	31	13
Not able to identify a strategy or instead describes how the game is played	13	7

Comments:

Typical responses from Year 8 students to the question 'What strategies did you use?' included: moving faster than the others; waiting to see which direction others were moving in; and running to the closest hoop. Almost twice as many Year 8 than Year 4 students were able to identify more than one strategy that they had utilised.

Interviews

Student example Year 8:

What strategies did you use to play Stop Ball?

Well I found you have to look to where everyone was going because in the first round everyone just went to their right so we were all going round in a circle, so then I tried to go left

Did that work?

Well it did actually - once it did - but then they all made a new strategy.

Why do you think it worked?

Because if everyone was going in a different direction, and you are going in the other [opposite] one then they have a good chance of not winning.

What did the others do?

They looked where everyone else was going before they set off. I did that too - but I could definitely see them trying to do that.

Y8

Student examples Year 4:

What strategies did you use to play Stop Ball?

I went fast and I grabbed the ball and put it in the hoop

Did your strategy work? Why?

Yes cos I used my speed

What did the others do?

They used their speed too.

Y4

Many students found it challenging to clearly articulate their actual strategy. Students frequently used gesture to point out where they went. Teacher assessors listened to the explanation and sometimes needed to seek clarification.

What strategies did you use to play Stop Ball?

My first three rounds all I did was M went that way (turns and points) so I went to get the ball from her hoop and put it into mine.

So what was your actual strategy?

Wait till the other person goes the other way and go and get their ball.

Did that work? Why?

Yes, because if they're going the other way they're not focused on me.

What strategies did the others use?

I think they just ran around trying to find a ball.

Y4

What did we learn?

Because of the simplicity of the game, the students quickly adhered to the rules. The element of competition did not appear to deter participation. Each game was short and lasted only seconds in some cases. Students appeared to be eager to play after each of the game adaptations.

There was an observable difference in the skill levels between Year 4 and Year 8 students. At the high-range level, 22 percent of Year 8 students showed efficient, fluid movement while just 6 percent of Year 4 students were rated in this category. Conversely, almost twice as many Year 4 students as Year 8 appeared in the low-range band.

When the students were interviewed about their strategies, there was also a distinct difference between Year 4 and Year 8. Year 8 students acknowledged the importance of speed and agility but were also more likely to explain that they needed to observe their opponents before they chose where to move to. They referred to watching and waiting. Year 4 students knew that certain skills such as speed were required to win the game.

Implications for physical education teaching and learning

Providing opportunities for students to implement strategies then evaluate and modify them needs to be purposefully planned for in physical education lessons. Teachers need to include questioning that will encourage students to solve problems. Strategies can be brainstormed, shared in pairs, drawn on paper, trialled, evaluated and adapted.

When selecting a game for assessment purposes the criteria used by NMSSA and noted below, might be helpful. Choose games that provide all children with:

- opportunities to demonstrate movement skills (and equipment if applicable)
- activities that accommodate varying abilities
- maximum opportunity for participation throughout the game (i.e. not waiting for a turn)
- a safe playing context/ environment
- opportunities to think, focus and reflect on the skills and strategies they are using.

When assessing students' achievement in movement it is helpful to have a clear set of criteria to support decision making. The following table, developed by Ovens and Smith (2006), underpinned the NMSSA assessment criteria. The table is particularly helpful as multiple elements of movement and critical thinking are utilised when engaged in a game.

Table 3: The components of skill

SKILLED MOVEMENT	OBSERVABLE ACTION	DEGREE OF ACHIEVEMENT ----- Consistency/correctness -----		
		Stage One	Stage Two	Stage Three
TECHNIQUE	Grip, stance, swing, movement pattern, flow of movement.	Incorrect technique. Disjointed, jerky, incorrect movements.	Still has some technical faults. More consistent movement patterns but not yet a flowing action.	Technically correct. Movement is smooth and flowing.
EFFECTIVENESS OF ACTIONS	Accuracy, distance, direction, speed, form/shape, symmetry, advantage.	Not able to achieve desired outcome.	Performance outcome inconsistent. Not a predictable result.	Consistently meets desired goal.
APPLICATION OF TACTICS AND STRATEGY	Defending and attacking strategies. Formation and application of appropriate responsive action e.g. creating space.	Does not use appropriate strategies and tactics.	More consistently uses strategies and tactics to advantage.	Consistently uses strategies and tactics to gain advantage.
PERCEPTIVENESS OF MOVEMENT	Ability to read play or opponents actions.	Does not demonstrate the ability to anticipate or read play.	More consistently shows anticipation e.g. moves into appropriate positions earlier.	Is consistent in using anticipation and perception to advantage.
ADAPTABILITY CREATIVITY	Ability to modify or create action to suit the situation. Improvisation, imagination, creativity.	Unable to adapt play. Actions lack imagination and original thought.	Demonstrates some degree of adaptability and original ideas but not consistently.	Uses own initiative and imagination in movement.

References / resources

Ovens, A. & Smith, W. (2006) Skill: Making sense of a complex concept. *Journal of Physical Education New Zealand*, 39, (1), 72-82

Stepping Patterns

Key area of learning (NZC):	Physical activity
NMSSA focus:	Locomotion / Creativity and adaptability
Assessment approach:	Pair activity, one-to-one interview

Te ao kori (the world of movement) embodies many cultural expressions unique to Aotearoa New Zealand. 'Throughout history Māori have developed ways to sharpen mental and physical agility, hand-eye coordination, and a sense of well-being'.¹⁷ The *Stepping Patterns* task draws on those traditions by using poi toa and mau rākau skills. Traditional games and pastimes such as those utilised in *Stepping Patterns* are a vehicle for exploring heritage and culture, as well as developing transferable movement skills.

What did we want to find out?

We were interested to find out how well the students could perform oma and peke tūwhanga movements (see p. 41); whether they could put these steps together to create a movement sequence; and whether they could incorporate apparatus into a sequence. The students were assessed on two movement dimensions. These were locomotion, and adaptability and creativity of movement both with, and without, the poi toa and rākau.

We were also interested to find out whether students would recognise the stepping patterns in other movement activities they might have participated in or observed.



¹⁷ <http://health.tki.org.nz/Key-collections/Exploring-te-ao-kori/What-is-te-ao-kori>.



Students worked in pairs to create two movement sequences — one demonstrating two newly-learned (for some) stepping patterns, and a new sequence using equipment. Both sequences were videoed for assessment purposes.



Task instructions

In this activity you are going to learn two stepping patterns and use them to create your own movement sequence.

Stepping patterns have been used by Māori in many different ways. They can show how birds move. They can be used when telling Māori stories. They can be used in celebrations.

The students learned the two patterns oma, and peke tūwhanga and were given time to practise these.

Now, in pairs create a movement sequence using both patterns – oma and peke tūwhanga. Use the stepping patterns to move around your area.

Students have 5 minutes to create and practise their patterns. They then perform their patterns for the camera.

Now you have 5 minutes to make a new sequence together using either the poi toa or rākau in creative ways. You can use any stepping patterns you like in your new sequence. The poi toa and rākau are used for playing and learning how to spin, pass and catch. When you are using the equipment remember kaitiaki, that is - respect self, respect others, and respect the resources.

Following the second performance the students were interviewed individually about the movements, and what they attended to as they were performing.

TA demonstrated moves as: hope = hands on hips
oma = run with heel-to-butt flick
peke tūwhanga = wide stance jump, hop, jump, hop (alternating heel to butt on hop)

How did students respond?

Dimensions assessed.

1. Locomotion – (jumping/ stepping/ hopping/ running/ landing as in oma and peke tūwhanga)

Both stepping patterns are performed in a fluid and balanced manner, with spring and upright posture

% response
Y4 Y8

7 18

Aspects of the movement patterns are attempted and sometimes but not always are performed in a fluid and balanced way.

38 51

The movement patterns are not clear and are performed with little spring.

47 28

Insufficient movement, does not participate

8 3

2. Adaptability/creativity without equipment

Performs movement sequence fluidly and rhythmically.
Uses patterns and space creatively.

2 17

Performs movement sequence using space and pattern simply with occasional error.

35 50

Performs simple sequence – attempts a pattern with several errors

56 30

Insufficient movement – does not participate

7 3

3. Adaptability/creativity with equipment

Fluidly performs movement sequence mastering use of equipment creatively and skillfully

% response
Y4 Y8

6 12

Performs a movement sequence incorporating simple use of equipment (swings poi consistently in same circular pattern)

47 65

Performs a movement sequence attempting to incorporate equipment but may drop equipment or maintain a set stance holding equipment

44 23

Insufficient movement – does not participate

3 0

Student example 1: Year 8 (Students A & B worked as a pair)

The steps (Locomotion)

Student A demonstrated an upright stance with arms in hope position (fists on hips) throughout. Her oma was performed with definite flicks. The student was light on her feet and had bounce or spring in her steps. The oma step looked correct and the movement as described here was maintained throughout. Peke tūwhanga was slightly less consistent with the jump hop movement transforming into a rhythmic two bounce then hop pattern occasionally.

Student B also held her arms hope throughout. Her oma was not discernably different from a simple run. She maintained a correct jump and hop pattern for peke tūwhanga but her movement was laboured and flat-footed. She had less spring but was more accurate and consistent in maintaining the pattern of the second step.

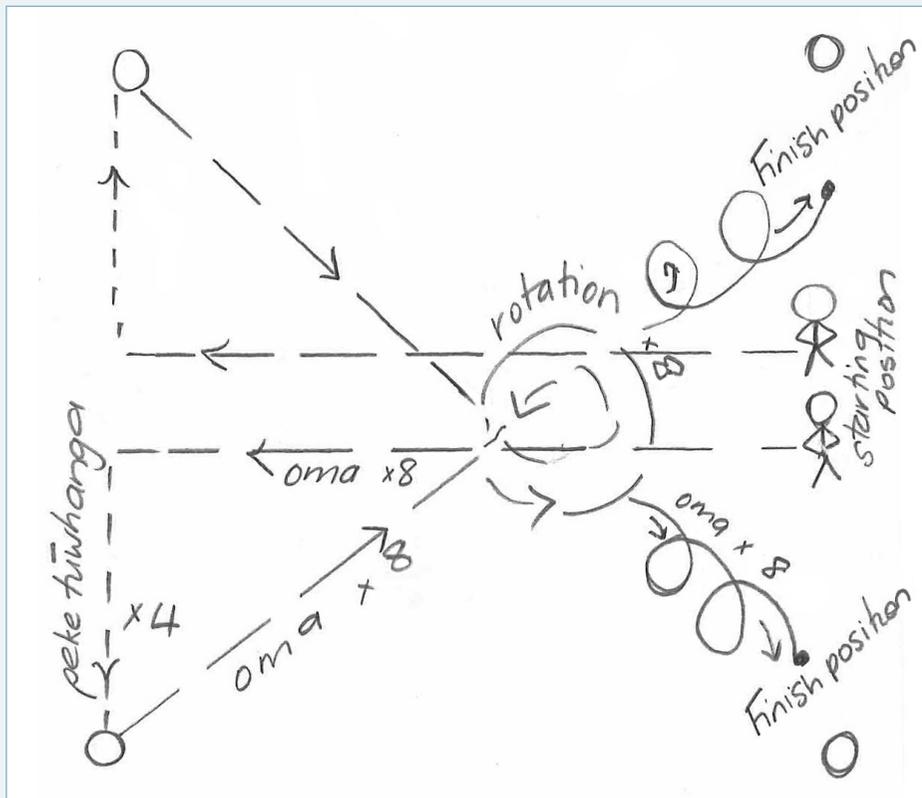


Figure 6: Movement sequence

The movement sequence (Adaptability/ Creativity)

There was obvious consideration given by the pair to the use of space. The synchronised movements of the two participants were carefully practised in the time frame given. The students made a good effort to make an interesting pattern. They moved in a parallel formation across the middle, then turned to move along the perimeter to opposite corners. They created mirrored actions as they moved diagonally to meet at the centre. They included a central rotating movement, and then spun out to opposite corners to finish. They used oma and peke tūwhanga for each change of direction, moving from one step to the other fluidly (Figure 6).

Adaptability/ creativity with equipment – poi toa

The students created a simpler sequence when incorporating the poi. This time they did not use peke tūwhanga but moved around the space in a controlled way and in a definite pattern using oma. They attempted a face to face side jump, but it appeared to be easier to match oma and poi, rather than jumps and poi. They alternated large and small figure 8s with the poi

and managed to create a fairly consistent and rhythmic twirl. They started and finished their sequence by assuming a static stance with poi held tautly in front.

There was certainly evidence of team work. One student demonstrated more fluid, confident and light movement than the other, but the routine they developed suited both.

Student example 2: Year 8 (Students C & D worked as a pair)**Adaptability/ creativity with equipment - mau rākau**

Students C and D stood side by side to start their short sequence. They held the rākau in their left hands. To begin the sequence, the students used their wrists and fingers to twirl the rākau at waist height. They then began to move in a parallel formation towards the front of the space.

As Student C travelled forwards he rotated his body in a complete turn as he transferred the rākau from one hand to the other. He then held the rākau in a stationary position in his right hand as he moved into the next step and kept it there while he performed the peke tūwhanga step twice.

Student D maintained a forward facing position and momentum. He moved his shoulders from side to side as he travelled, transferring the rākau to his right hand behind his back before bringing it forward and retrieving it with his left hand. Student D continued to twirl the rākau with his wrist and fingers as he moved into a peke tūwhanga step. He then changed the movements of the rākau to match the rhythm of the peke tūwhanga using his left hand to bring the vertically positioned rākau across his body to meet his right hand and out to the side again twice.

To finish both students twirled the rākau with the same movements they had started with (i.e. complete body rotation, or side to side shoulder movement).

Both students demonstrated consistent twirling of the rākau, however Student D showed greater fluidity, rhythm and skill, and a smoother transition from one step to another.

Year 4 students.

Year 4 students in particular found this task challenging. Half of them had difficulty mastering the steps (oma frequently became a simple run, and peke tūwhanga was executed with either no lift off the ground, or as a forward moving step and hop). Creating and remembering a sequence was also hard for many. They often adopted a follow the leader pattern, with one making the decisions and the other following a step behind around the perimeter of the space. Performances were very short — from 10 to 40 seconds. The students found it easier when incorporating the equipment — it appeared to be easier to manipulate the poi toa or mau rākau than maintaining the steps.

Individual Interview

At the conclusion of their movement sequences, students identified activities they knew, or participated in where they could move in a similar way.

4. Tell me about activities you do or know about where you can move in these ways.

Suggests TWO or more different activities/ contexts	24	55
Suggest ONE activity (e.g. kapa haka, netball) – or context (dance, sports, skipping)	42	37
No suggestions	34	8

% response

Y4 Y8



The following example illustrates the contribution of kapa haka, but also shows that the student can transfer learning in one context to another.

I do Aku Waiata so performing Kapa Haka at Poly – Poly Group we do stuff like that, like the stepping patterns and stuff like that I had done them before at Aku Waiata and then also just sports like we do Ki-o-Rahi which is a really good sport and we use some of them when we are like doing it. Like for oma that's like a warm up like butt flicks that we do for like – I play netball and so that's one of our warm-ups that we do. Y8

The following response notes that opportunities to learn to use stepping patterns, poi toa, and mau rākau also occur at school.

Well –we were using the poi and at our school we have opportunities to be able to learn how to use the poi ...which I haven't personally done but my partner ... has and the boys and stuff they also are allowed to use the sticks and to try using them like that (shows movements). I've learned lots of stepping patterns before. I learnt the stepping patterns at school. I've used poi before but I was quite little. Y8

What did we learn?

Half of the Year 8 students and just over a third of Year 4 students attempted the oma and peke tūwhanga movements with some success. Consistently balanced, controlled and fluid movement was achieved by fewer students (6 percent at Year 4 and 18 percent at Year 8).

Similar results were evident as students created their sequences without equipment. Students at both year levels (Year 4, 66 percent; Year 8, 92 percent) could describe at least one context where they had either observed these movements, or used these movements in other activities.

While not statistically significant, the average mean scores of Year 4 students indicated that Māori students performed slightly better than non-Māori students on the movement items for this task.

Students participating in the NMSSA study were asked about their opportunities to learn in HPE in a contextual questionnaire.¹⁸ Half of the students at both Year 4 and Year 8 responded 'often' or 'very often' to having the opportunity to *learn games, dance or movement from different cultures (like Māori or Pasifika games)*. Teachers of Year 4 students were more likely to include these opportunities than Year 8 teachers, according to the teacher responses on the questionnaire.

Implications for physical education teaching and learning

'Kia hiwa rā' – be alert to culture, build on students' cultural strengths (McFarlane, 2004).

It is expected that teachers will include te ao kori activities in their HPE teaching and learning programmes. These activities help develop transferrable skills, for example stepping patterns link to a range of complex movement skills.

The Ministry of Education website Te Kete Ipurangi contains valuable information to support teachers as they explore te ao kori with the students in their classes.

<http://health.tki.org.nz/Key-collections/Exploring-te-ao-kori>

There is a direct link on the site to Tauria whakaraka (Māori stepping patterns) at:

<http://health.tki.org.nz/Key-collections/Exploring-te-ao-kori/Learning-experiences/Music-and-movement/Stepping-patterns>

Schools might also take a stocktake of the ways of moving that are explored during physical education lessons. This may be driven by what equipment, apparatus and artefacts are available for movement in their school. Check the range of equipment students have access to, and consider what could be added to the resources to extend the movement experiences.

Useful references / resources

MacFarlane A. (2004) *Kia hiwa rā! Listen to culture: Māori students' plea to educators*. Wellington: NZCER Press.

NMSSA Report 16: *Health and Physical Education 2017 – Key Findings*.

Rangatahi Tū Rangatira (R2R). <https://www.r2r.org.nz>.

¹⁸ NMSSA Report 16: *Health and Physical Education 2017 - Key Findings*, p.44.

PART 4

Key competencies in NMSSA assessments

There are many opportunities within the HPE learning area to develop key competencies. Through HPE assessments in NMSSA we provided students with opportunities to use or demonstrate some of these competencies. Table 4 (following page) shows how the key competencies, as described on pages 12 and 13 of the New Zealand Curriculum (2007), relate to the NMSSA HPE assessment. These competencies are woven through the NMSSA assessment tasks.

In this section we describe three tasks where students' developing competencies are visible through what they write and say.

The first task is *Well-being* which embraces four of the five competencies, but in particular *managing self* (including self-awareness) and *relating to others* (including social awareness). Well-being encompasses many of the dimensions of these competencies including self-perception, developing resilience, self-management, communication, perspective taking and building relationships.

The second task comprises a component of the *Fitness Tracker* task. This component focuses on numeracy, which draws on aspects of the key competencies *using language, symbols and texts*, and *thinking*.

The final task focuses on literacy, an aspect of *using language, symbols and texts*, and on *critical thinking*.

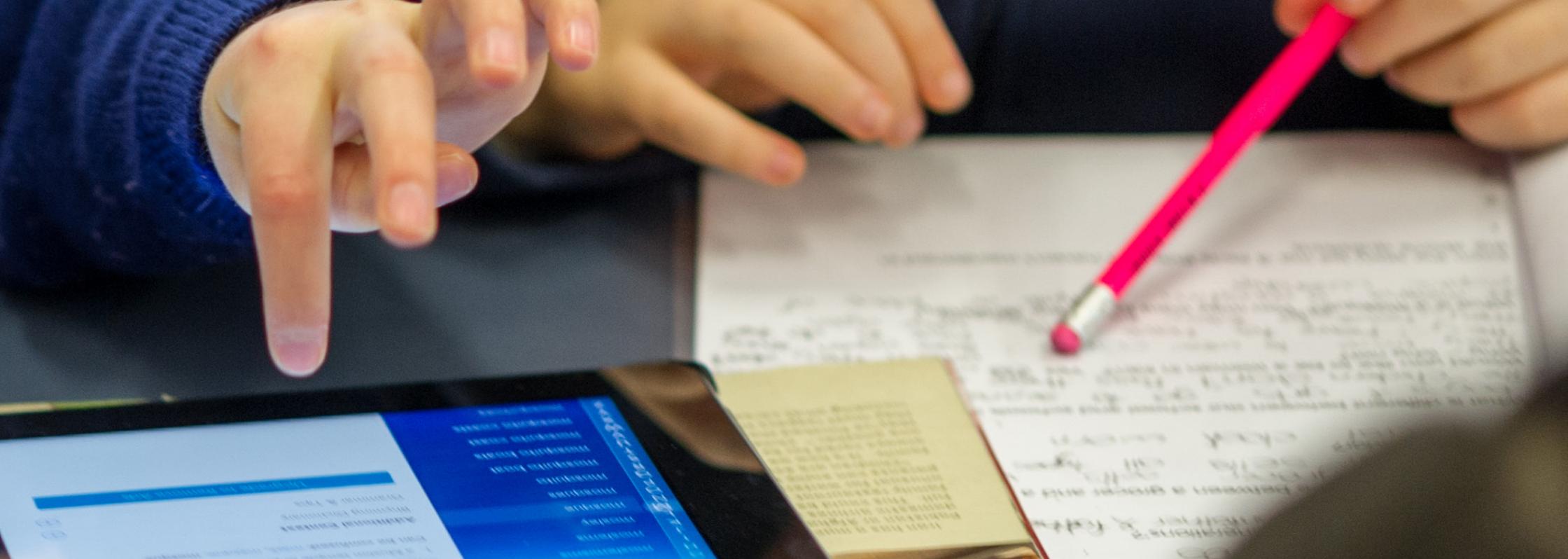


Table 4: Key competencies as they are enacted in NMSSA HPE assessment

Key Competencies	In NMSSA Critical Thinking (CT) assessment in HPE	In NMSSA Learning Through Movement (LTM) ¹⁹ assessment:
Thinking	Thinking critically and creatively; reflecting, evaluating.	Creating and strategising, critiquing and reflecting when learning in physical activity contexts.
Managing self	Engaging in critical thinking and action in regard to developing strategies to manage personal well-being.	Demonstrating self-motivation, and personal goal setting. Developing strategies for personal wellbeing.
Relating to others	Understanding others' perspectives, and developing abilities to manage and enhance positive relationships. Working together to engage in health promotion.	Interacting with others in play and as part of a team. Understanding the impact of competition and co-operation on relationships. Working together and reflecting on personal responsibility to relationship building.
Participating and contributing	Building health promotion strategies and a sense of belonging through engaging in critical action.	Active engagement with peers which contributes to sense of belonging. Connecting with others, contributing ideas and creating opportunities for others – working together and demonstrating leadership.
Using language, symbols and texts	Understanding how symbols, tools, and texts are used to communicate health information and ideas (for health and movement purposes).	Understanding movement as a text or narrative. Interpreting and using movement to convey meaning. Expressing and interpreting social and cultural practices through movement.

¹⁹ Adapted from *Physical activity for healthy confident kids. Guidelines for sustainable physical activity in school communities* SPARC MoE (2007), p.16.

Well-being

Key area of learning (NZC): Mental health

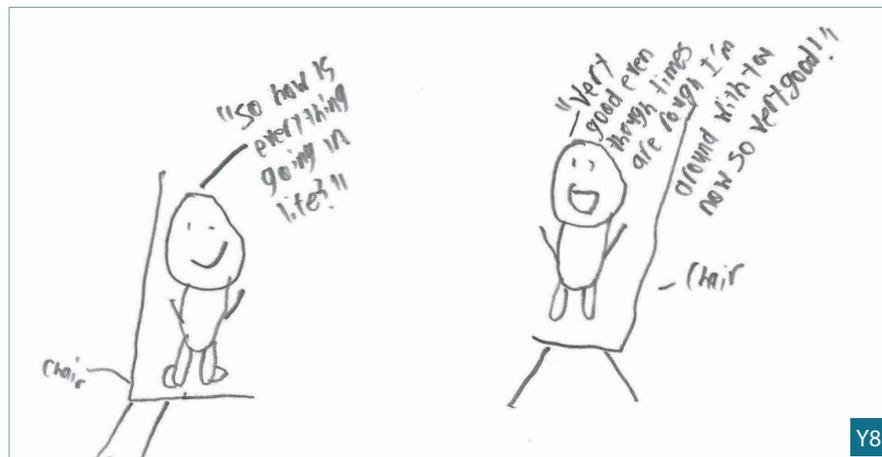
Underlying concepts: Hauora/ Health promotion/ Socio-ecological

Key competencies: Managing self; Relating to others; Participating and Contributing; Thinking

Assessment approach: One-to-one interview

The notion of well-being is central to the Health and Physical Education learning area. The World Health Organisation's Ottawa Charter (1986) viewed well-being as a holistic concept encompassing not just the biological aspects of health but also the physical, social, mental, emotional and spiritual dimensions. The HPE learning area endorses a Māori philosophy of health, hauora,²⁰ which is comprised of four mutually-supporting dimensions – taha hinengaro (mental and emotional well-being); taha whānau (social well-being) taha tinana (physical well-being); and taha wairua (spiritual well-being). These dimensions form the whare tapa whā model.

The NMSSA task aimed to capture the breadth of students' conceptions through initially having students draw their ideas and/or write words about well-being. In a one-to-one interview, students discussed these ideas and the way they contributed to feelings of wellness and happiness. The teacher assessor encouraged the students to explain the link between their ideas and well-being.



Y8

What did we want to find out ?

Firstly, we were interested to find out what students identified as factors that contributed to well-being based on the model of hauora. Additionally we were interested in whether students had a sense of the multi-faceted dimensions of well-being. We signalled to them that they could include 'feelings' as part of what they might share. Secondly, drawing on the socio-ecological perspective adopted by the HPE curriculum, we were interested to see if they understood the interrelationship that exists between the individual, others and society, and if they could see well-being from other perspectives i.e. 'what people could do or have'. We wanted them to share these ideas with us not just from their own perspective but from the perspective of others. This open task enabled them to draw on any aspect that they thought was significant. We were also interested to find out whether Year 8 students would have a more balanced, comprehensive conceptualisation of the four dimensions of well-being than Year 4 students.

Task instructions

Some people talk about how important it is to feel well and happy. This is sometimes called hauora or well-being. There are lots of different kinds of things that people do or have in their life that help them feel well and happy.

On your page, draw some pictures or write words to show the things that people can do or have in their life to keep themselves feeling well and happy. Try to think of ideas that are different from each other.

Prompts

Tell me what you have drawn or written.

Tell me how [student response] makes people feel well and happy.

Are there any other things that people can do, or have in their life, to feel well and happy?

²⁰ In health and physical education, the use of the word *hauora* is based on Mason Durie's Te Whare Tapa Whā model (Durie, 1994). Hauora and well-being, though not synonyms, share much common ground.

How were the responses marked?

Students discussed their views with the teacher assessor in a recorded interview and their ideas were subsequently categorised into dimensions of well-being using the marking guide shown in Table 5. This process ensured that a student's written/drawn response was probed and discussed before being categorised. Markers were able to listen to the student's response and gain a fuller understanding of the rationale for the student's inclusion of this aspect. For example, if a student listed 'going for a walk' as a well-being activity and when probed, said it was because they walked with a friend and liked catching up with that friend, then in that case, the walk would be categorised as primarily representing a 'social' dimension of well-being. The categorisation of responses was therefore as consistent with the hauora model as was reasonably possible, without asking students to classify their own activities.²¹

Note: This task did not contribute to the CT assessment scale.

Table 5 : Guidelines used to categorise student responses to the Well-being task

Dimension of well-being	Example category	Examples from students' responses
Taha tinana (physical) These relate to the physical body, its growth and development, ability to move, and ways of caring for the body	1. Food	Eat healthy food, Drink water, Don't eat lollies
	2. Exercise (formal/informal)	Sport, Playing games, Fitness, Going for a walk, Jogging, Dance
	3. Physical safety	Sun smart, Water safety, Wear a bike helmet/seat belt, Road safety
	4. Cleanliness/personal hygiene	Teeth, Body
	5. Preventing illness	Wash hands, Cover mouth when sneezing, Take medication, Keep warm
	6. Sleep	Get enough sleep
	7. Agencies related to physical well-being	Doctor, Nurse, Dentist
Taha hinengaro (mental and emotional) These relate to coherent thinking processes, acknowledging thoughts and feelings, and responding constructively to mental/emotional challenges	8. Leisure activities	Fresh air/be outside, Computer games, Do art, Watch TV, Music, Garden, Play with animals/pets, Hobbies
	9. Personal safety	Anti-bullying, Computer safety, Social media, Time limit for TV
	10. Mental activities/challenges/emotions	Learn, Feel good about yourself, Take risks, Be happy, Have dreams/goals, Have self-control, Save money/job, Be proud, Laugh, Love/Hug, Stay calm, Keep to rules
	11. Relaxation techniques	Relaxation, Meditation – to relieve stress, Rest
	12. Agencies related to mental wellbeing	Counsellor
Taha whānau (social) These relate to family relationships, friendships, feelings of belonging, compassion, caring, social support	13. Interacting with others	Have friends/be a friend, Help others, Care for others/pets, Stick up for others, Join a team, Let people join in, Be kind to others, Share problems/talk with others, Spend time with family
Taha wairua (spiritual) <ul style="list-style-type: none"> The way people live, personal identity, Self-awareness 	14. Agencies related to spiritual well-being	Attend church/places of worship, Priest, Praying, Self-identity/ Know where I belong, Social justice, Values – valuing others, Financial support/giving money, Be thankful, Be respectful, Mindfulness, Meditation, Meaning/purpose in life, Marae

²¹ NMSSA Report 16: Health and Physical Education 2017 – Key Findings. p.75.

How did the students respond?

Most students could identify and describe physical, mental and emotional/ social aspects that contributed to feelings of well-being. A much smaller number of students could identify and describe an example of spiritual well-being. Some students at Year 8 were able to explicitly relate understanding of well-being to the whare tapa whā model of hauora.

Examples of student responses Year 8

All of the dimensions of well-being are covered in this Year 8 response. The student deliberately uses the hauora framework — physical well-being, spiritual well-being, emotional/mental well-being and social well-being and in both the written and spoken responses uses the dimensions to categorise the ideas.

For **physical** I wrote - Food. What you're eating can determine your mood - it affects your body in a healthy way so it makes a good mindset as well - 'I'm doing the right thing - eating the right food'.

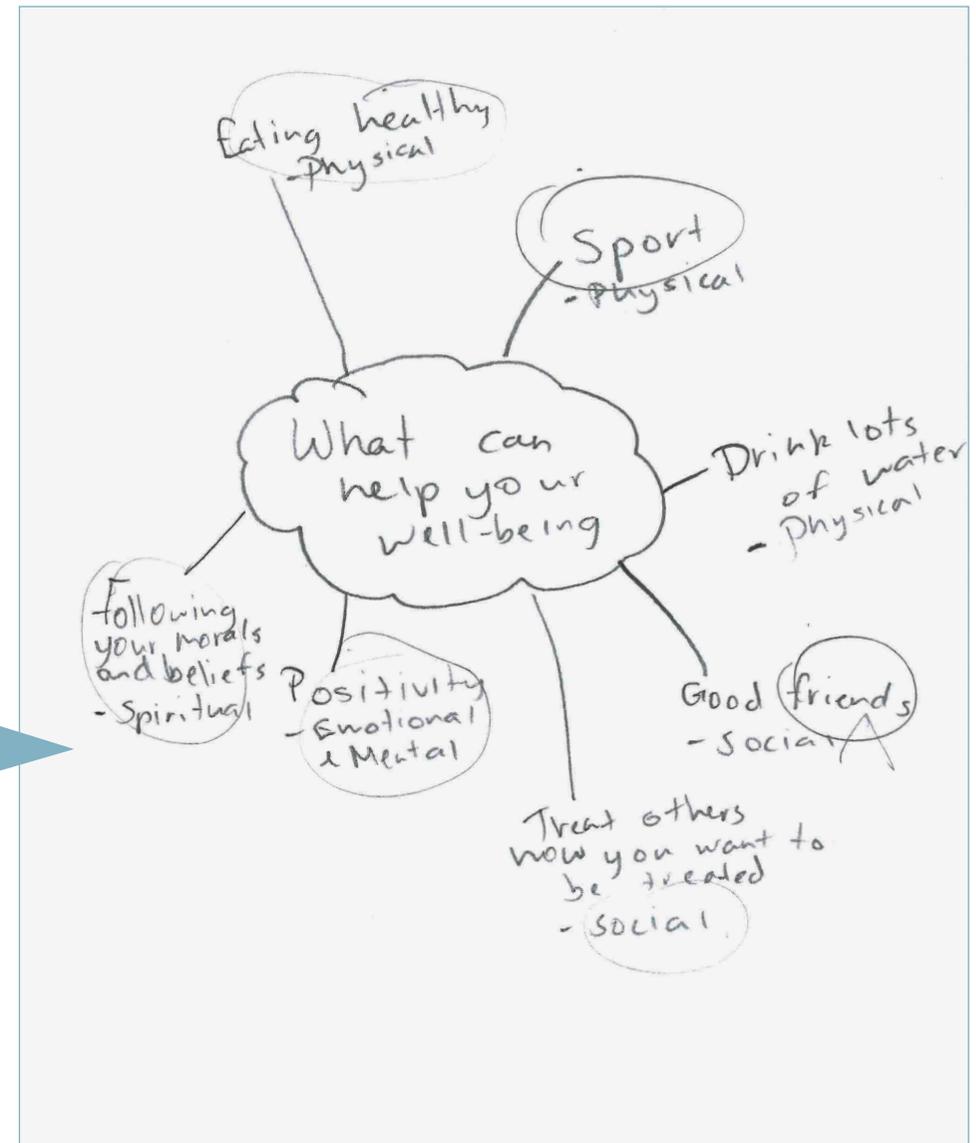
And sport - So like it's fun getting rushes of adrenalin and feeling really good about yourself - it's meeting up with your friends - it helps your social life as well.

For **spiritual** I put following your moral and beliefs. Doing the right thing makes you have a good mindset.

For **emotional and mental wellbeing** I put positivity. Positivity is just being happy.

For **social well-being** I put good friends - I think your friends are the biggest influences on your decisions and if you have good friends you'll make good decisions and they'll be able to support you.

Y8



I've got a few different ideas - I've got exercise because when you exercise you automatically feel good about yourself.

If you have friends you can talk to people which can make you feel more energised and happy.

You can meditate to get rid of all the stress and calm yourself down and take some time to get away from things that are making you unhappy.

You can play sport sometimes - well for me, sport can take my mind off things and make me feel happy.

Some people can get therapy if they are feeling unhappy - a therapist can give them advice.

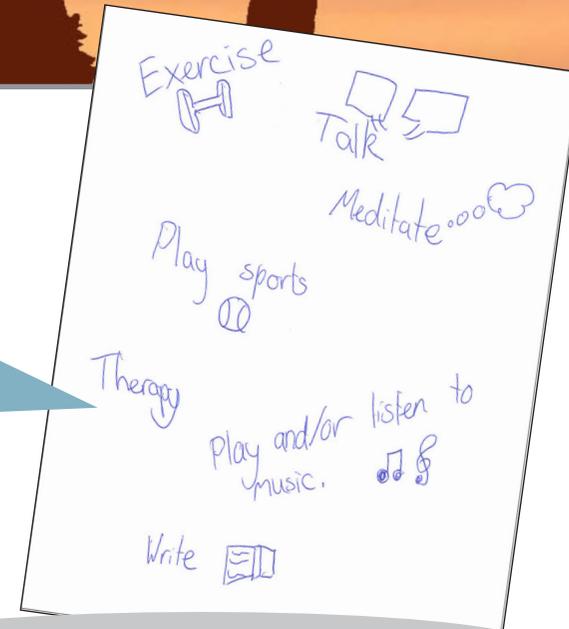
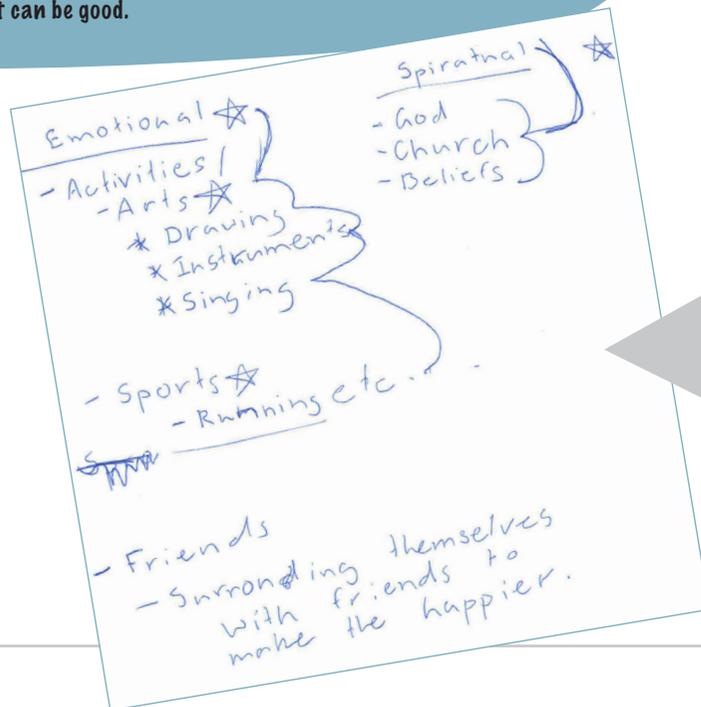
You can play or listen to music - you listen to music and it just kinds of stimulates your brain and you just feel happier - same if you play an instrument.

You can write so if you aren't feeling good you can write down your feelings and sometimes you feel a lot better about it.

What else could you have or do?

Pets - if you feel as though you've got something that you are caring for and looking after that can be good.

Y8



Beliefs - going to church, believing in God - I think that believing in something makes them feel happy and well. They feel backed when they believe in something.

Activities such as art and sports - everyone has an activity that makes them happy and doing something takes your mind off things -and there's such a range of activities that there's something for everyone.

When you surround yourself with good friends they'll make you feel good no matter what and it's always good to have company.

Are there any other things that people can do, or have in their life to feel well and happy?

The outdoors is very calming and you can let everything go when you're hiking. Not everyone loves the outdoors - some people prefer to stay inside somewhere quiet to read and think - because while you're reading you can think about things.

Y8

Examples of student responses Year 4



Tell me about your drawing.

I have put my dad - when he goes fishing he's happy and proud of himself that he's caught something.

How does going fishing make people feel well and happy?

Going fishing means people get fresh air and have quiet time.

Then when I go to my grandma's house we do sewing together and it makes us happy cos we're doing team work to figure it out.

How does sewing together make people feel well and happy?

It's challenging because you're learning how to do something new.

My brother loves reading so whenever he's bored or angry he just goes to his room and shuts the door and starts reading and that makes him happy.

How does that make people feel well and happy?

It helps you calm down.

For me doing gymnastics and art make me happy cos gymnastics is my hobby, that's me doing a cartwheel, and I love art.

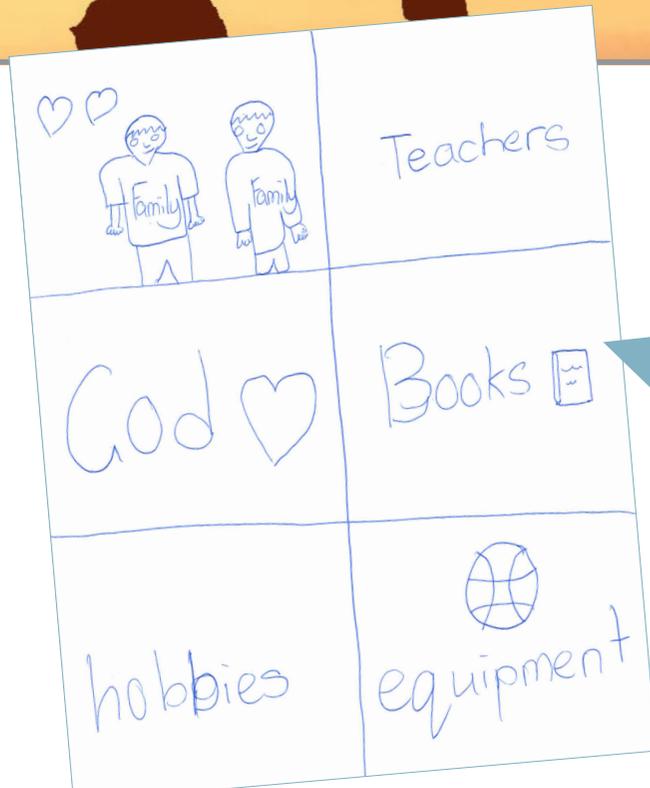
How does gymnastics make you feel well and happy?

Because I like doing it and when I'm angry I just go to where there's lots of space and do some so I calm down. My art is my really big hobby - it's fun because you get creative and do what your imagination wants to do and it can be challenging.

Anything else people could do to feel well and happy?

People could smile at each other because just by one smile can make people brighten their day and they'll feel really happy.

Y4



Tell me what you have drawn and written.

Families make people feel well and happy because they care for you and provide a roof over your head, and when it's cold they might put a blanket over you, or cuddle you and tuck you into bed.

I've written teachers 'cos they can make you feel happy and joyful.

God, 'cos God shows you how to be loving and kind.

Books, as books can take things off your mind and that lets you relax.

Hobbies because they make you feel good, and equipment like basketballs and skateboards 'cos you can just do it and forget about things that have gone wrong in the past.

Y4

If you have friends it's a good way to keep happy and if you're happy you are a lot healthier ...

If you don't have your rest and sleep you'll definitely be really tired and quite miserable and you won't want to do much.

Do something you enjoy - it will boost you up a bit...

If you don't have fresh air - if you're stuck inside all day you don't get the fresh air you need so you should be outside meeting friends and having fun.

Y4

fun sport, friends. Helpy food,
Rest and sleep, Balenst Diet, playing outside,
Bfeveing space, en joy abole, fun, something you
enjoy

my whanau

For some Year 4 students their perception of feeling well and happy was tied up in a simple concept - family.

Summary of responses

Table 6: Percentage of students identifying each dimension of Well-being by gender and year level.

Dimension of well-being	Year 4			Year 8		
	All	Boys	Girls	All	Boys	Girls
Taha tinana (<i>Physical well-being</i>)	60	62.5	57	72	67	76
Taha hinengaro (<i>Mental/Emotional well-being</i>)	81	78.4	83	93	93.1	93.5
Taha whānau (<i>Social well-being</i>)	83	80.3	85.5	89	86.2	91.5
Taha wairua (<i>Spiritual well-being</i>)	7.5	10.1	4.5	17.2	13.8	20.5

Most students at both Year 4 and Year 8 were able to identify factors related to taha hinengaro (mental and emotional well-being); and taha whānau (social well-being) as contributing to what people do or have in their lives in terms of well-being. Slightly fewer students at both year levels noted aspects of taha tinana (physical well-being), however, a much smaller proportion identified taha wairua (spiritual well-being).

In a count of the paper responses of a random selection of 20 students at Year 4 the factor that was mentioned most frequently was the importance of friends. Ten of the twenty students identified friends as being important to being well and happy. Being active was next. Family, healthy food, being outdoors, and doing something you enjoy, were equally reported by the students.

Having friends was highest on the list for the Year 8 students as well. Over the 20 random Year 8 responses analysed, there was greater diversity of ideas than for the Year 4 students and in some cases, the way of expressing ideas was more sophisticated. The Year 8 students mentioned having a passion (Year 4 - doing something you love), relationships, having a positive outlook on life, socialising and being yourself — happy with your own company at times, having someone you trust to talk to, learning something new, and respect, alongside family, pets, healthy lifestyle (healthy food and being fit), as contributing factors.

More than two thirds of teachers responding to the NMSSA questionnaire indicated that they *often or very often provided opportunities for their students to learn about different ways to be healthy and happy*. At least half of both Year 4 and Year 8 students agreed, and around a third of the students said as well, that they often *‘talked with their class about the things their family or whānau do to be healthy and happy’*.²²

What did we learn?

The dimension of well-being that most students struggled with was understanding what the spiritual aspect represents. This does not mean that this dimension of well-being does not exist in these students' lives. Roberston (2018) suggests that, “The abstract nature of spirituality (in that it's not a tangible, observable ‘thing’ and more a ‘sense of something’) tends to mean that students make more sense of the idea as they mature. This is not just because they have learned more, but also a consequence of their developing ability to think more abstractly” (p. 59).²³ This would perhaps suggest that we might have expected to see more Year 8 students name an idea that could be categorised as a dimension of taha wairua (spiritual well-being). At Year 8 this was evident but only slightly, as is shown in Table 6. What was notable was that more boys than girls at Year 4, identified an aspect of spirituality in their response to the task.

Implications for health and physical education teaching and learning

All of us face challenges in a world where social media, and society more broadly, impact on an individual's sense of self. As children and young people develop resilience and a sense of personal and social responsibility, they are increasingly able to take responsibility for themselves and contribute to the well-being of those around them, of their communities, of their environments (including natural environments), and of the wider society.

²² NMSSA Report 16: Health and Physical Education 2017 – Key Findings, p. 43.

²³ Mental Health and Resilience. https://nzhea.files.wordpress.com/2018/05/nzhea-mental-health-and-resilience_may-20181.pdf.

Teachers can help develop these competencies. Wherever teachers can affirm individual strengths, build resilience, and support diversity and inclusion, they need to do so. With regard to hauora, the well-being dimensions of taha hinengaro, taha whānau, and taha tinana can be undermined if we do not attend to our wairua (spirituality) and have a strong sense of who we are and where we belong. Hauora is at the heart of this learning area and each dimension influences and supports the others. Taha wairua is a dimension of well-being that school communities and teachers should emphasise and focus on, as highlighted in the findings above.

Useful references / resources

Teachers may find reading the recently released 2018 report²⁴ from the Office of the Children's Commissioner and Oranga Tamariki helpful. The children and young people who took part in the project said that wellbeing is all about 'having a good life'. To them, a good life is one where they can feel accepted, valued and respected, be happy, have the support of family and friends, have their basic needs met, enjoy good physical and mental health, have a good education and feel safe.

Health promoting schools: Promoting hauora/wellbeing available at <https://www.cph.co.nz/your-health/hauora-in-schools/>

Student wellbeing. *Making a difference to student wellbeing* (NZCER), available at <http://www.wellbeingatschool.org.nz/>

Well-being for success: A resource for schools March 2016 ERO available at <https://www.ero.govt.nz/publications/wellbeing-for-success-a-resource-for-schools/>

Fitzpatrick, K., Wells, K., Tasker, G., Webber, M., & Riedel, R. (2018). *Mental health education and hauora : Teaching interpersonal skills, resilience, and well-being*. Wellington, NZ : NZCER Press

Roberston, Jenny (2018) *Mental Health and Resilience Teaching and Learning Activities for NZC Levels 6- 8* available at https://nzhea.files.wordpress.com/2018/05/nzhea-mental-health-and-resilience_may-20181.pdf



²⁴ What makes a good life? <http://www.occ.org.nz/assets/Uploads/What-makes-a-good-life-report-OCC-OT-2019-WEB2.pdf>

Reading a graph

Key Competency : Using language, text and symbols.

NMSSA focus: Numeracy

Assessment approach: Pencil and paper



Several of the NMSSA HPE assessment tasks were designed to involve the application of numeracy skills and understandings in a HPE context. This section of the report looks at how students responded to questions in a task called *Fitness Tracker* that involved a numeracy dimension.

Numeracy involves formulating situations mathematically, employing mathematics and interpreting, applying and evaluating mathematical outcomes. One way we employ mathematics is by extracting information from graphs. Graphs combine a range of visual cues such as colour, position, shape, size, density, slope and symbols to encode information about data. These visual cues allow us to develop instantaneous impressions about patterns and magnitudes with minimum mental effort. Graphs often include scales which, as a kind of number line, require strong understandings of how numbers work and the size of the units involved.

Graphs are often used to communicate information related to HPE and come in a myriad of different forms. Sometimes graphs are poorly designed and include features that are redundant or distracting. When making meaning from a graph, users have to be prepared to think critically and check their initial impressions.

Fitness Tracker was a task that was developed for the CT assessment. It included a number of questions focussed on a graph that showed the number of steps taken each day by a student called Alex over the last week (Figure 7). At Year 4, students were asked three questions that assessed their ability to make meaning from the graph. At Year 8, students answered the same three questions and an additional question which required them to use the information in the graph to solve a problem. Students wrote their answers in an answer booklet.

What did we want to find out?

We were interested to find out whether students would be able to identify the purpose of the fitness tracker graph and make sense of the information it contained.

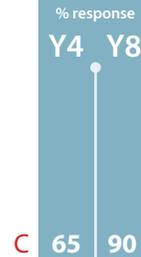


Figure 7: The graph used as part of the *Fitness Tracker* task

How did students respond?

1. Which statement is true? (circle your answer)

- A. Alex made the most steps on Wednesday.
- B. Most days Alex has made more than 10 000 steps.
- C. Alex made more steps on Tuesday than on Thursday.
- D. There were no days where Alex made more than 10 000 steps.



Comments:

The first question asked students to consider four statements about the information shown in the graph and to circle the one that was true. The majority of students at both year levels were able to select the correct answer (option C — 'Alex made more steps on Tuesday than on Thursday').

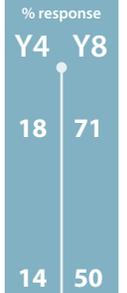
At Year 4, 18 percent of the students selected option B — 'Most days Alex has made more than 10 000 steps'. This suggests that they may have misinterpreted the white line that crosses the graph as representing 10,000 rather than 8 000 steps. Alex did exceed 8000 steps on most days but not 10 000. Option B was also the most popular incorrect answer at Year 8 (6 percent of students).

2. How many steps do you think Alex is trying to walk each day?

8 000 steps 18 71

3. What things on the graph tell you this?

The student recognises how the line and/or stars are used to highlight a goal. 14 50



Comments:

The second question asked students how many steps Alex might be trying to walk each day and what features of the graph might support this. Overall, Year 8 students found this question much more straight forward than Year 4 students. In general, students found it more difficult to explain which features of the graph supported their ideas about the number of steps Alex was aiming at, than to recognise that Alex was aiming for 8000 steps.

4. Why could making a graph like this, help someone to be more active?

The student describes the benefit of an activity goal and making comparisons e.g. Helps him to set and achieve a target; allows him to see where he needs to improve; motivates him to walk more when he sees a low number of steps or try and beat his score

Comments:

Forty-four percent of the Year 4 students and 84 percent of the students at Year 8 were able to provide appropriate reasoning that connected the use of the graph with becoming more active.

5. Alex has walked nearly 60 000 steps during the week

a. About how far do you think he walked?

- more than 60 kilometres
- between 30 and 60 kilometres
- less than 30 kilometres

b. Show how you worked out your answer.

Comments:

The last question, which was completed by Year 8 students only, focussed on students' ability to use the information in the graph to solve a problem. Students were asked to estimate how far Alex had walked during the week given that the graph indicated he had taken nearly 60 000 steps.

% response

Y4 Y8

44 84

14

57

29

Most students (57 percent) indicated that Alex had walked somewhere between 30 and 60 kilometres. Twenty-nine percent indicated he had walked less than 30 kilometres and 14 percent indicated he had walked more than 60 kilometres.

Students were also asked to show how they worked out their answer. Their responses were scored according to the reasoning they used and how well they communicated their answers.

Students were given full credit for their reasoning when their response provided a strong justification that an informed reader could easily follow. Researchers were looking for the students to make realistic assumptions about Alex's stride-length and then to use an appropriate calculation.

a foot is about a step which is roughly $\frac{1}{2}$ a metre so I divide 60 000 in half which is 30 000m

Overall, about 10 percent of the Year 8 students provided a strongly reasoned and clearly communicated answer.

Another 55 percent provided reasoning which either required the reader to make significant inferences, was incomplete, or included some unrealistic assumptions (for instance, that one step would be equivalent to 2 metres).

A fair proportion of the students who received partial credit appeared to take the instruction 'Show how you worked out your answer' to mean show the mathematical calculation you used. The figure below provides an example of this type of response.

The image shows handwritten mathematical work. At the top, the equation $9 + 7 + 10 + 7 + 9 + 11 + 4 = 57$ is written. Below this are three separate addition problems:

$$\begin{array}{r} 9 \\ 7 \\ 10 \\ 7 \\ 9 \\ 11 \\ 4 \\ \hline 47 \end{array}$$

$$\begin{array}{r} 11 \\ 4 \\ \hline 15 \end{array}$$

$$\begin{array}{r} 42 \\ 15 \\ \hline 57 \end{array}$$

Overall, the responses indicated that many students were unsure how to best present their reasoning, even when they could construct a reasonable answer. There were also a number of students who struggled to make a reasonable assumption about the stride length.

What did we learn?

As noted earlier, graphs are often used to record and communicate information related to health and movement. As such, HPE provides many opportunities for students to interact with graphs. The results of the exercise indicate that students have developed a much better appreciation of how to extract meaning from a bar graph between Year 4 and Year 8. However, even at Year 8 some students appear to be unsure of how the graph is operating. When using graphs, even fairly straight forward ones, we need to be careful not to assume that the meanings in the graph can be taken for granted.

From a numeracy perspective, the results also suggest that some students are unsure of what it means to clearly show their reasoning. Providing a justification for an answer includes providing appropriate detail so a reader knows what assumptions have been made (for example, that one stride is about 0.8 of a metre) and what calculation has led to the answer.

Implications for teaching and learning

The findings suggests students would benefit from more opportunities to:

- work with a range of real graphs
- construct graphs
- think critically about graphs and the extent to which they clearly encode information about data
- look at and discuss models of reasoned answers.

Writing Rules

Key Competency :	Using language, text and symbols
NMSSA focus:	Literacy
Assessment approach:	Pencil and paper

Many of the HPE assessment tasks required students to demonstrate their literacy skills. In this section we look closely at one task that involved writing.

In this task students watched a home video that showed children at a country school in New Zealand playing *Bar the Door* at lunch time. The video was filmed at a rural school in the 1970s and clearly illustrated the rough and tumble of the game. There was no verbal commentary on the video.

The students were asked to propose some new guidelines for the playground game that would enable it to be played at their school. The task was left as open as possible, without mention of safety, fairness, or enjoyment, so that the students would have a wide scope for their responses. They were asked to write their ideas as a set of rules.

This task enabled us to investigate students' ability to:

- think critically about the way students played the game in the 1970s
- consider aspects of game play such as safety of players, enjoyment, inclusion and fairness
- demonstrate creative solutions in proposing new guidelines
- select appropriate language, structure and features to meet the purpose of compiling a written set of rules.

What did we want to find out?

We were interested to find out whether the students would consider ideas of fair play, and inclusion, as well as ensuring safe behaviour when adapting *Bar the Door* for their school, and whether they would use procedural text conventions when writing their rules.

Procedural texts (including rules) have accepted structures and language features depending on the context (i.e. writing a recipe is different to writing mapping directions; and writing rules for different kinds of games will also have accepted variations). A fully effective piece of procedural writing in health and physical education that demonstrates the characteristics of written rules, would include some of the following text and language features:

- a series of imperative statements organised into lists, bulleted or numbered, that tell the way the game is 'regulated'
- statements/ phrases starting with a bossy verb or imperative
- timeless present tense
- straightforward succinct statements
- clear and unambiguous meaning
- an objective, reasoned tone
- topic-specific vocabulary.

The subject of each statement might be implied.

How did students respond?

Task instructions.

In this activity you will watch a video that shows some children playing a game called *Bar the Door* at school about 40 years ago.

The aim of the game is for one person to run from one end of the field to the other without getting caught by the other team. If a person gets through to the other side, their whole team is allowed to run across.

Some schools are now thinking of bringing back this game but with new rules.

As you watch the video, think of 3 or 4 rules that you would make for the game.

Question

If *Bar the Door* was to be played at your school, what rules need to be made for the game?

Write down the new rules.

Try to write three or more rules.

Make your rules as clear as you can.

Ideas	Y4	Y8
Suggests three or more different game adaptations	17	44
Suggests two different rules e.g. changes to playing field, number of players, player behavior	27	30
Rules are repetitive e.g. one idea expressed different ways	34	19
Non-specific, vague e.g. have rules, help each other	22	7

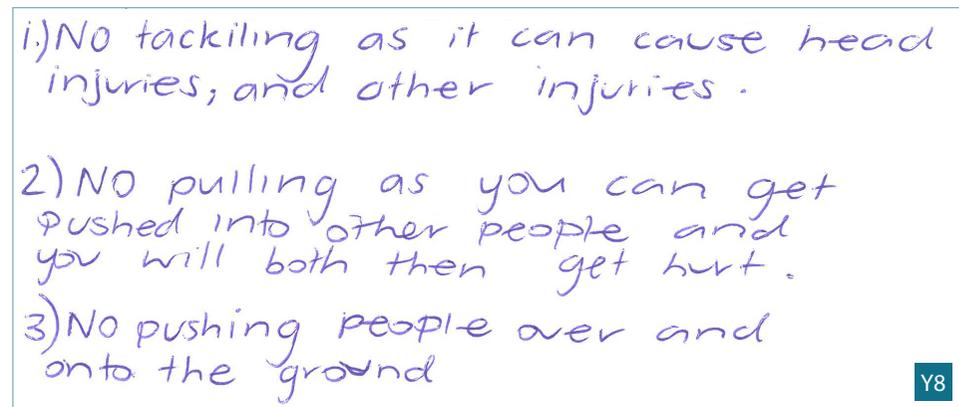
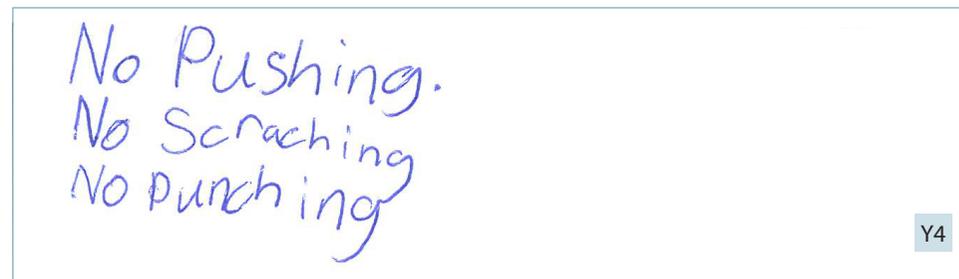
Comments

More than three quarters of the students at both year levels were able to write at least one idea as a rule that would improve an aspect of the game. By far the most popular new rule focused on physical safety, with many variations proposed.

% response
Y4 Y8

Student examples

A cohesive parallel structure is demonstrated in both of the following responses – one from a year 4 student and one from a year 8 student. The Year 8 example includes reasons for eliminating aggressive behaviour, however both sets of responses were deemed to be variations of a single idea.



Students gained a higher score if their ideas were more comprehensive. The following two responses are from Year 4 students who are aware of being inclusive and of playing fair.

1. No tackling or it would be banned here

2. If two people can go if one of them is in a wheel chair and the other person is pushing it so everyone can play

3. No strong or forceful holding of peoples clothes

Y4

1. you are not ~~allowed~~ allowed to tackle only tag the person so you do not hurt other people.

2. Help someone up if they fall over.

3. Be careful and safe so you do not have to go to hospital.

4. play for fun not winning

5. play fair

6. use kind words

Y4

The following two examples are from Year 8 students. Both of these responses promote positive actions. The suggestions made by these students include ideas to level the playing field for the running team – tap to tag, limit the number of blockers, increase the number of runners, enable the next runner to start earlier, change the boundaries, and demobilise the tagged students by having them sit or stay in the same spot when they are caught.

1. The first rule that I would make is that instead of grabbing them and pulling them to the ground, you should just tap them and say 'tag!' and then you sit down.
2. There shouldn't be that many people on the blocking team, otherwise you would have to be the fastest person out of the group.
3. As soon as you get tagged the next person in the group runs so they actually have a chance of getting there.

Y8

- * There should be more than one person running at the same time so the taggers don't always mark one player.
- * There should be a 8 more shorter but wider field/boundaries so the runner doesn't need to run that much.
- * If you get tagged, (except for the original tagger) you have to stay in the same spot and tag.
- * There shouldn't be too many taggers.

Y8

Does the writing suit the purpose? Do the rules sound like rules?

Statements consistently include language and text features that are appropriate to written rules.

Rule like statements are embedded within fuller sentences OR are written in a mix of imperative, conditional and complex statements

Teacher scribed or indecipherable

Is the writing organized like rules?

Use of organizational device - numbering, bullets, list format.

No evidence of organization

Teacher scribed or indecipherable

% response	
Y4	Y8
10	14
80	85
10	1
76	92
14	7
10	1

Comments

For the most part, the students' ideas were expressed in a 'rule-like' manner, however there was variety in the way ideas were phrased. There was an expectation by the NMSSA team that the students would express their ideas in imperative statements (or commands). They did not consistently do that, however most students wrote with an imperative 'tone'; they had one idea per statement, sometimes elaborated either with a justification or with a contrasting action; and almost always listed their rules one under the other, and used numbers, or bullets to differentiate their points.

Student examples – Year 4

1. no punching only talking

Y4

① No Talking!! No Punching!!

Y4

~~do not~~
1. be aware of other people

2. if you get ~~tagged~~ ^{tagged} you have to go back to your team

3. tag people

Y4



Student examples – Year 8

1. No tackling

2. Only tag people and try not to hurt them

3. If you get tagged you are out and can go to the other team or watch the rest of the game

or

or

other team

Y4

1. Do not push or shove the person running, you only need to touch them.
2. Have at least two people running across.
3. Give the person running a few seconds to start.
4. 1 - 10 people in a team.

Y8

Have a non-tackle version with rippers instead (rippa rugby)

More than one person runs at the same time

Restrict contact areas

Y8

1) Instead of ~~two~~ tackling (them) people down tag them three times.

2) Instead of one person running at a time. Everyone should run.

3) They should wear bibs to know who is in which team.

Y8



Vocabulary

Increasing sophistication in word choice – e.g. umpire, boundary, regions, restrict, contact

Uses everyday vocabulary – e.g. tackle, hit, field

Limited vocabulary – e.g. nice, mean

Teacher scribed or indecipherable

% response	
Y4	Y8
1	8
60	81
29	10
10	1

Comments

There was a slightly wider range of topic-focused vocabulary used by Year 8 students compared to Year 4 students. However this was a fairly constrained task and the potential for expansive vocabulary was limited.

Year 8 students were more likely to use words like *respect, participate, fair*; as well as more topic-specific words like *umpire, referee, area, boundary, regions, contact, opposition, goal*. At both year levels many students used variations of *tackle, tag, shove, push, hit*.

What did we learn?

Most students were able to think of at least one rule which would improve the safety and/or enjoyment of the game. The ideas as recorded were able to be understood and the students showed that they were aware that written rules have features which differentiate them from other forms of informative writing.

Implications for health and physical education teaching and learning

Teachers might:

- Explore the ways rules are written – different ways for different purposes. What do they all have in common?
- Consider what kinds of rules are helpful. Encourage students to think about what the players should do, rather than what they shouldn't, so an alternative is provided e.g. Instead of *Don't tackle* the rule could be *Tag your opponent*
- Practice turning negative statements or rules into positive statements.
- Consider ways games can be improved so that all can enjoy them. Think about ways to make games inclusive.
- Provide opportunities for students to create their own games and rules, and try them out.
- Remind students that they need to consider safety, but also look for opportunities to enhance the social, emotional and physical experience of playing games.
- Brainstorm games that students can play at lunch times and intervals; consider the benefits and disadvantages (i.e. do they include everyone, how many students can play at once etc). Write some new rules for these.
- Consider how competition and co-operation change the way we approach the way we play games. Consider how to inject an element of both into some games by writing a new rule or way of playing. Try it out. Evaluate the result.

References for teachers

For further information about writing for curriculum purposes refer to:

- PACT Writing meaningful text: using knowledge of text structure and features
- PACT :Writing meaningful text: vocabulary knowledge
- Refer to tki : Features of text forms; instructions
<http://englishonline.tki.org.nz/English-Online/Planning-for-my-students-needs/Resources-research-and-professional-support/Features-of-text-forms/Instructions>
- Refer to tki: Writing hub <http://literacyonline.tki.org.nz/Literacy-Online/Planning-for-my-students-needs/Writing-hub/Teaching-writing-in-years-1-8> (and years 1-3)

