

# A PRACTICAL AND EASY TOOL KIT FOR MAPPING AND MEASURING HEALTHY OUTCOMES OF OUTDOOR LEARNING

Outdoor learning in natural environments addresses vital 21st century student outcomes fostering: a healthy and happy body and mind; a sociable, confident person; a self-directed and creative learner; an effective contributor and an active global citizen (Malone and Waite 2016:19). This tool kit addresses the first of these outcomes, offering means by which teachers, advisers and academics can evaluate the benefits of outdoor learning for the health and wellbeing of staff and children.

The tool kit has been developed from the Mapping and Measuring Healthy Outcomes (MMHO) research project and provides a poster, simple questionnaires and advice to help schools undertake small-scale research, independently or with support, to provide valuable insights into pupils' health and wellbeing. The evidence collected through the simple research techniques shown here can help make the case to parents, governors and assessors as well as policy developers. It can help monitor how outdoor learning becomes integrated across the whole school and enhance its recognition in the development of happy and healthy schools.

**To find out more about the research underpinning the tool kit, please see part 3.**

If you have any questions or want to know more about using the tool kit, please contact [aelresnet@plymouth.ac.uk](mailto:aelresnet@plymouth.ac.uk) .  
We are happy to help.



## WHAT IS THE TOOL KIT BASED ON?

The Mapping and Measuring Healthy Outcomes (MMHO) research project (2015-2016) compared the use of questionnaires with instruments to analyse the quantity and impact of physical activity while learning in different environments. It found that these measurement techniques were statistically equivalent when comparing sedentary or active behaviour (Wright, Aronsson, Graham, Waite and Waite, 2016)

Over a summer term, Key Stage 2 children from two schools were given pedometers or accelerometers and questionnaires to measure sedentary behaviour or levels of physical activity. The two schools were chosen to compare the physical activity during their indoor and outdoor classes, because they were geographically close to each other and both were interested in finding out more about the benefits of outdoor learning. The pedometers measured the number of steps; the accelerometers measured the intensity of the activity levels; and the questionnaires provided an additional comparative tool using self-report.

According to this small-scale study trialling multiple methods of measuring activity levels, schools do not need to buy equipment or use expensive instruments to provide evidence; key stage 2 children's perceptions are sufficiently accurate to provide indicative data compared to accepted objective measures. A simple self-report children's questionnaire (included in this folder) has been developed from this research to collect information that shows the levels of physical activity stimulated by different outdoor learning lessons and those delivered inside the classroom.

A teacher questionnaire was also tested, mindful that the wellbeing of the whole school is important and that teaching staff can promote health and wellbeing through embodying school ethos and desired behaviour (Weare, 2016). This also proved to be a useful tool providing a rapid proxy for whole class activity levels in different lessons. The teacher was able to represent a reasonably accurate assessment of physical activity of the whole class in graphic form quickly and easily. The resultant teacher questionnaire can also be found in this folder.

We established that individual children have very different physical activity patterns, and so cannot be directly compared to the teachers' results for the whole class. It therefore depends on what you are particularly interested in measuring and mapping, which of these tools will be most appropriate to use. If you simply want to estimate the number of opportunities that children have to be physically active during classes, the teacher assessment may be sufficient, but if you would like to see how effective different interventions are in raising all children's activity levels then the self-report is better suited.

Wellbeing of teachers themselves is beneficial in terms of job satisfaction and teacher retention. The school could expand on this aspect if they would like to.



## Ethics

Before any research is carried out, it is vital to ensure that all those involved in the research have agreed to be part of it and know what to expect and how the data will be used. Children will need parental permission as well as consenting themselves to take part. Use of photography and video will also need specific permissions. If you would like to contribute to the wider evidence base, you will need to let people know that you will share the data you collect and that it may be published but that the publications will not reveal personal or school details. Sharing your evidence with the researchers at Plymouth University will enable us to gather evidence across schools but you must let participants know if you are intending to do this.

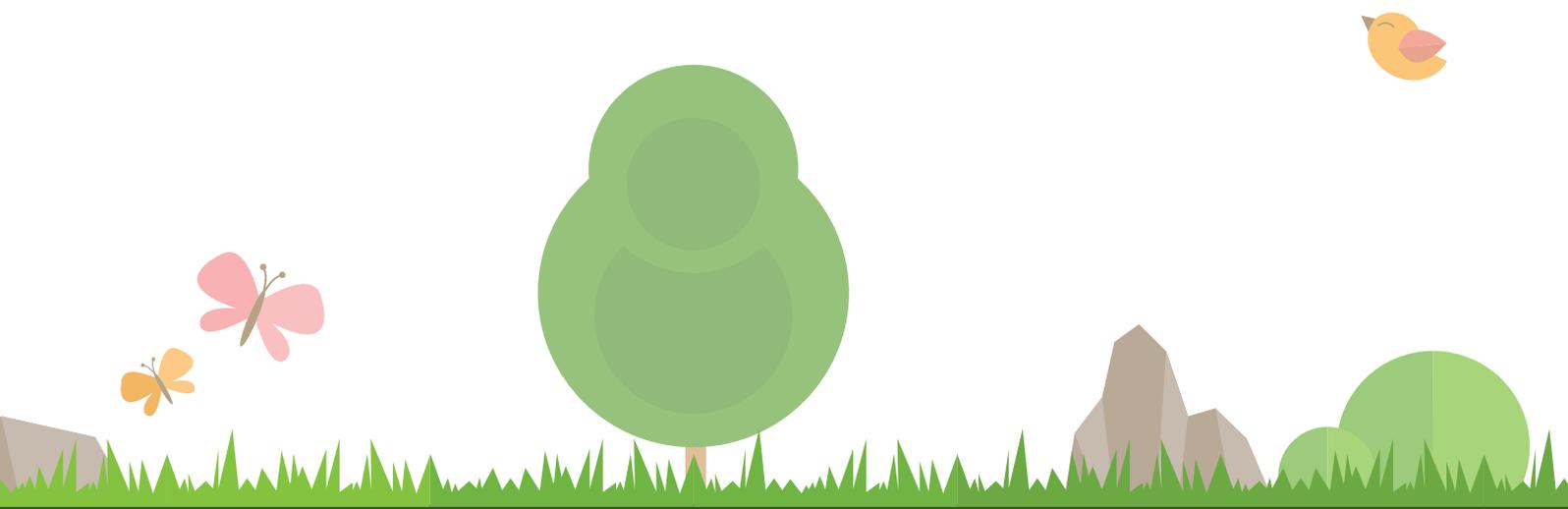
## Review this tool kit

If you have queries about the use of this tool kit or wish to comment and feedback so that it can be improved, please contact [oesresnet@plymouth.ac.uk](mailto:oesresnet@plymouth.ac.uk). We hope to review and refine it in the future as new research and analysis is completed.

## Acknowledgments

CREATING HAPPY AND HEALTHY SCHOOLS THROUGH OUTDOOR LEARNING was developed by a team of academics and practitioners from the outdoor and experiential learning research network at Plymouth University, supported by the Institute of Health and Community and funders of the Devon Natural Healthy Schools project: Campaign for the Protection of Rural England (Devon), Devon County Council, Devon Local Nature Partnership and Natural England. Many thanks to all involved.

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# A TOOL KIT IN FOUR PARTS:

## Part 1. Doing research - collecting the evidence of the health benefits of outdoor learning

Questionnaires – all aspects of health and wellbeing, staff and children

Pedometers

Accelerometers

Creative ways of collecting evidence

Quantitative results

Qualitative information

## Part 2. Using the evidence

Evidence for policy development

Evidence for school development

Evidence for awards

## Part 3. Research, key publications and links

Further details of the research underpinning this tool kit

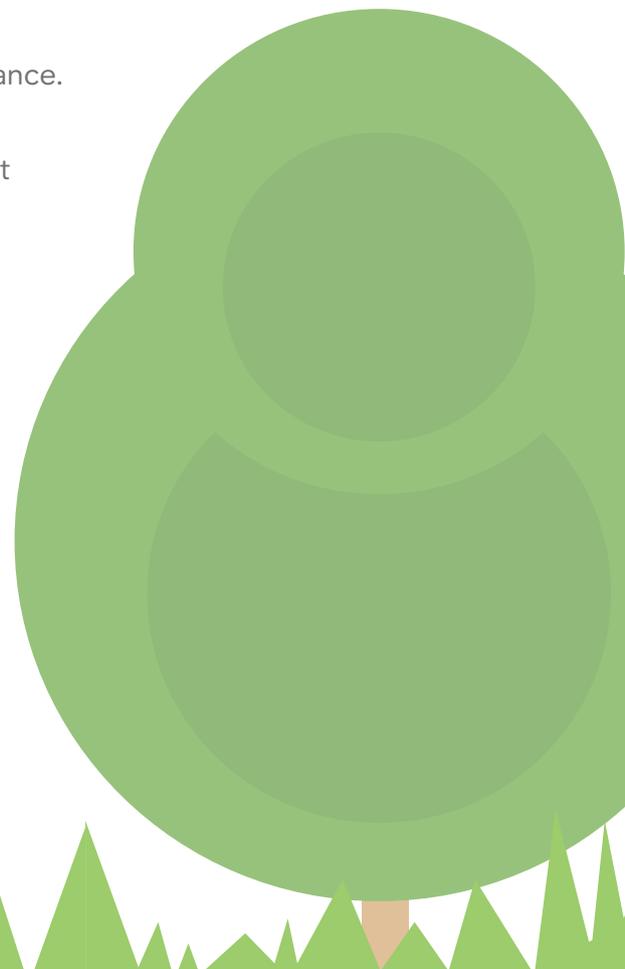
A selection of reports, chapters and books and useful links to support the rationale for and use of LINE for healthy outcomes

## Part 4. Poster, research ruler and questionnaires

The tool kit summarised in poster format for audit guidance.

A 'Cut out' ruler format to help guide research design.

Questionnaires to be photocopied and amended to suit your research focus.



# PART 1. DOING RESEARCH - COLLECTING THE EVIDENCE OF THE HEALTH BENEFITS OF LINE

## Questionnaires

The MMHO study showed that the children's questionnaire on its own would provide statistically reliable results for assessing physical activity by children learning in different environments. The advantages of the self-report method are:

- It is simple to complete.
- It is designed for children of key stage 2 and older who completed it in 10-15 minutes.
- It provides quantifiable data.
- It allows for the children to share their experience through drawing or writing, providing some qualitative evidence (Graham, 2016).
- It is a low-cost option, compared to use of pedometers or accelerometers.

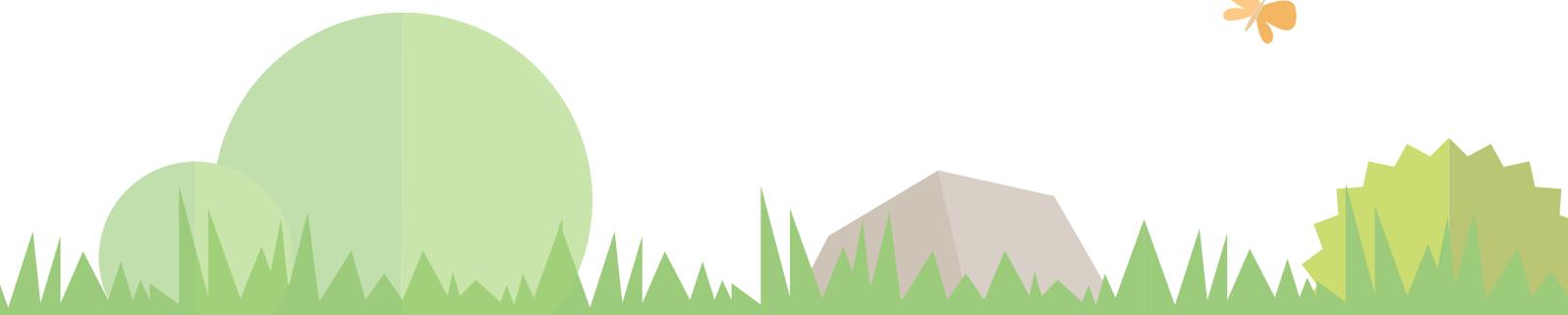
As time is short for teachers, the teacher questionnaire includes a simple literal mapping of physical activity during a session. This provides additional evidence for health-based pedagogy and could act as a portfolio record to monitor the spread of healthy lessons across the school. It also has questions that relate to the health and wellbeing of the teacher.

Natural Connections and the Naturally Healthy Devon Schools project evidence shows that outdoor learning has positive impacts on teachers' personal and professional sense of wellbeing (Waite, Passy, Gilchrist, Hunt and Blackwell, 2016 ; Gilchrist, Lewis and Waite, 2017) and this has important implications for teacher retention and job satisfaction and health.

The graph format could also be modified as you wish for measuring different aspects of physical activity during a period of time or used as a template for other objectives such as behaviour management. The graphic depiction makes it a useful tool for discussion with the pupils about the lesson and helps them towards self-regulation through greater awareness.

## Pedometers

Although our MMHO study suggests that the self-report is sufficiently valid to provide data about activity levels, objective measurement can offer corroborative information as evidence. Numbers of steps taken measured with the use of pedometers can also be used in many different ways in lessons and build awareness about physical activity. Although different makes of instrument are not directly comparable and children take time to get used to being 'measured', pedometers can quantify changes in activity levels.



If a school wishes to purchase pedometers, we recommend that they purchase instruments that clip on tight and are robust. Sponsorship for their purchase might be possible – look at healthy walking, NHS or British Heart Foundation campaigns. A further advantage of this form of measurement is that it may provide an incentive for children to move more if they can chart the changes in their behaviour in graphs and see clear progress. Working with the figures at individual, class or whole school level can provide a useful maths curriculum focus as well as increasing their awareness of physical activity.

## Accelerometers

Schools wanting to take part in more complex research projects, in which instruments such as accelerometers are used, should contact local universities with expertise in their use and analysis. This may have cost implications as the equipment and analysis are expensive. However, universities are sometimes looking for schools to take part in research and shared research interests can be mutually beneficial. It is worth developing contacts and discussing opportunities if your school wants to become more research informed and evidenced. You can, for example, join Plymouth University's outdoor and experiential learning research network simply by emailing [aelresnet@plymouth.ac.uk](mailto:aelresnet@plymouth.ac.uk).

The network has about 300 members drawn from academic and practice backgrounds. It sends out a regular digest of news, research and events and organizes seminars, workshops and conferences to share knowledge and skills about outdoor and experiential learning.

## Creative ways of collecting evidence

Providing opportunities for writing and drawing are simple ways for researching some benefits. In addition, using photography, videos, recording conversations, playing games can all provide first hand assessments of benefits of learning outdoors. Look at the following web sites for more ideas. Examples of different creative research techniques can be found at:

<https://www.plymouth.ac.uk/research/aelres-net>

<http://ilovenature.org.uk/schools/narrative-journey>



# QUANTIFIABLE EVIDENCE

Analysis of the questionnaires is simple using a spreadsheet. As mentioned before, the children could do some of this analysis themselves as part of curricular activity.

The data that can be produced from the different methods is listed below.

## Children's questionnaires:

- Percentage of time and quantity of different types of activity
- Percentage of children feeling the impact of physical activity
- Percentage/number of children feeling 'better', happier as a result of learning outdoors.
- Proportion of learning time spent outside the classroom.

## Pedometers:

- Number of steps for inside and outside learning activities, to provide corroborative evidence to the questionnaire.
- Number of steps during a day of mixed activity compared to classes indoors
- Number of steps as a lifestyle/physical activity for a whole week.

## The staff questionnaire:

- Percentage of classes taken outside
- Percentage of staff with positive feedback about their own wellbeing after teaching outdoors
- Proportion of learning time with moderate or vigorous activity and sedentary behaviour

## Qualitative analysis

Free writing and the drawings by the children experiencing LINE can vividly illustrate activities in their own words. This provides an excellent direct and powerful way of including the child's perspective to reporting and consideration of practice and policy implications. Here are a couple of examples from the MMHO study.

Examples of responses to why children liked learning outdoors in woods or other natural place best included:



## Outdoor



*I like the free*

*You have more things around you*

*You can get air*

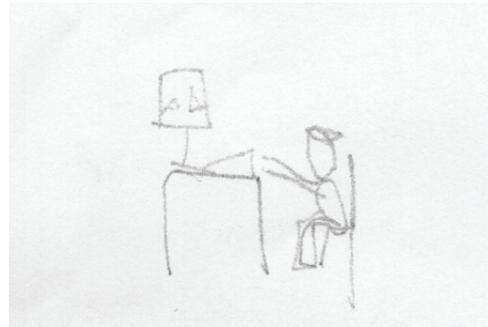
*It's shaded*

*It's fun*

*You get fresh air*

*You can do more physical activity*

## Indoor



The use of creative ways of producing evidence for outdoor learning in addition to quantifiable results from the questionnaire or pedometer methods presents a richer multi-faceted perspective on how physical activity and outdoor learning are perceived in schools. These creative methodologies are currently being further investigated and feedback about schools' needs and priorities for evidence will help inform our work. Please contact [aelresnet@plymouth.ac.uk](mailto:aelresnet@plymouth.ac.uk).



## PART 2. USING THE EVIDENCE

### EVIDENCE FOR POLICY DEVELOPMENT

The Natural Connections Demonstration and Naturally Healthy Devon Schools projects have shown that schools welcome evidence to support their development of outdoor learning. This is both to provide a rationale for its use and to evidence the impacts of its use. In addition, the Student Outcomes and Natural Schooling Pathways to Impact report (Malone and Waite, 2016) set out the following framework for desired student outcomes.

<b>The Policy Context</b> What (Themes /desired student outcomes)	<b>The Research Context</b> Why (evidence/research/ literature/theory)	<b>The Practice Context</b> How (Outdoor Learning form/ place/ pedagogies/ people)
<b>Theme 1:</b> Encouraging healthy bodies and positive lifestyles  <b>Desired student outcome:</b> <i>a healthy and happy body and mind</i>	Role of Green restorative theory/Attention Deficit and Hyperactivity Disorder/ anxiety/depression  Active bodies/ motor skills/ physical fitness/skills development  Healthy foods/gardening  Outdoor living skills	Experiential learning in natural settings  Outdoor education/learning  Learning Outside the Classroom  Vegetable gardens
<b>Theme 2:</b> Developing social, confident and connected people  <b>Desired student outcome:</b> <i>a sociable confident person</i>	Human social relations  Independent and critical thinking skills  Problem solving  Social development  Resilience- building	Problem based learning  Project based pedagogies  Social learning  Residential programs



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<b>Theme 3:</b> Stimulating self-regulated and creative learning <b>Desired student outcome:</b> <i>a self-directed creative learner</i>	Taking responsibility for own learning Self-regulation/self-awareness Self-management, self-efficacy Curiosity/inquiry Creativity	Inquiry learning Self-directed learning 'Adventurous' education Play pedagogies Wild free - nature play Cross-curricular and interdisciplinary learning Science Technology Engineering Arts and Mathematics (STEAM)
<b>Theme 4:</b> Supporting effective contributions and collaboration <b>Desired student outcome:</b> <i>an effective contributor</i>	Team building Leadership skills, development Risk assessment/taking calculated risks Innovator/entrepreneur Responsible decision-making, social resilience, collaboration skills.	Adventure education Residential programs Problem based learning Team building Field trips Service learning
<b>Theme 5:</b> Underpinning care and action for others and the environment <b>Desired student outcome:</b> <i>an active global citizen</i>	Appreciation of national and natural heritage Understanding issues of globalisation, cultural diversity and sustainable futures Environmental stewardships Volunteerism Empathy/care for more than human world Active environmental citizenry Contributing to planetary issues	Education for Sustainable Development (ESD)/ Environmental Education (EE) Geography & Science Field trips Global education Indigenous studies International studies Animal husbandry Place based learning

This framework illustrates how outdoor learning can address a wide range of beneficial outcomes within schools. Natural Connections and Naturally Healthy Devon Schools has also evidenced positive outcomes on both pupil and teacher sense of wellbeing (Waite et al., 2016; Gilchrist et al., 2017) and this toolkit can also address these aspects through asking about how they feel after basing their lesson time outdoors.

# EVIDENCE FOR SCHOOL DEVELOPMENT

As physical and mental health are very important foundations for successful learning and living, we focus on this priority which has powerful links to outdoor learning, that can be achieved alongside curricular objectives and where clear evidence can be gathered easily. The desired outcome is

- A healthy and happy body and mind (physical health and mental wellbeing)

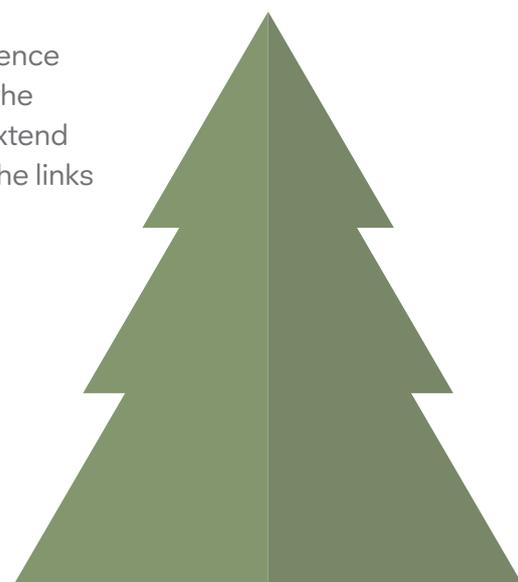
With this toolkit and other action research projects, schools can find out about:

School health and happiness – Use the quantitative and qualitative results from questionnaires to provide evidence as a snapshot to show the success of the school as a ‘good place to learn’.

School achievements in healthy outcomes – Assess before and after introducing learning outdoors in natural areas. Changes in levels of activity and sense of wellbeing can evidence direct impact or assist in adjusting plans to maximize impact. Use the blank poster to map out current outdoor learning activities in natural environments within school and identify gaps in which new activity could be developed to meet needs. The Natural Schools Service can help with this audit and evaluation process, if required.

Case studies and feedback – Reflective and qualitative evidence will help better understanding of the processes involved. This is especially useful for developmental work. Teachers can work together to share information and spread good practice.

Aggregate findings within networks in the area to strengthen any evidence and provide a bigger picture – sharing across schools will help affirm the case for outdoor learning and learning from others’ experience may extend and expand the ways in which your own school develops. Please see the links to possible networks in part 3.



# EVIDENCE FOR AWARDS

As an example of how these aspirations have been enacted, Plymouth City Council have a gold, silver and bronze level audit (Healthy Child Quality Mark) designed for schools to be awarded for their excellence in delivery of health benefits throughout all their learning programmes. The audit is based on criteria from a range of official policy and guidance documents (see <http://democracy.plymouth.gov.uk/documents/s53087/HCQM%20revised%20February%202014.pdf>) and is assessed in the following areas:

## 1. Healthy & Active Body

(Healthy food promotion and education and Physical activity)

## 2. Personal Social Health Education and wellbeing

(Personal safety, Drug education, Sex education, Bullying policy, Social and emotional wellbeing, Mental health)

## 3. Active Citizens

(Local and global citizenship. Environmental awareness)

## 4. Adult Health & Wellbeing and Whole School Ethos

(The work place supporting good health and wellbeing of staff)

**The following table summarises the potential for learning outdoors and its assessment.** This table may help schools to take steps to ensure that they provide this important foundation, and can be used as a development framework with the posters to chart school's progress.



## DEVELOPMENT FRAMEWORK

	Outdoor learning focus * indicates Public Health priority	Mapping outdoor learning activity: Indicators	Measuring physical activity and wellbeing: School self assessment and research methods
<p><b>Children and staff's health and wellbeing</b></p> <p><b>The rationale:</b></p> <p>Outdoor learning in natural environments activity benefits children and staff, their health and wellbeing (Waite et al., 2016; O'Brien et al., 2016; Aronsson et al., 2015)</p>	<p><b>Integrated whole school approach to learning outdoors</b></p> <p><b>Reduction of staff stress and illness*</b></p>	<p>Outdoor learning with curriculum teaching is integrated in school policy and the School Development Plan.</p> <p>All classes get opportunities to learn outside the classroom at least weekly.</p> <p>Increase in attainment levels.</p>	<p>Audit the school's current outdoor learning and health and wellbeing of pupils and staff.</p> <p>Plan interventions and actions.</p> <p>Implement and review.</p>
<p><b>A happy and healthy body</b></p> <p><b>The rationale:</b></p> <p>MMHO and other studies that show in general that outdoor learning in any subject, and particularly in woodland environments, increases the level of physical activity from sedentary significantly (Wright et al., 2016; Aronsson et al., 2015)</p>	<p><b>Physical wellbeing through active learning outside.</b></p> <p><b>Reduction in obesity*</b></p>	<p>An increasing percentage of curriculum based teaching takes place outside</p> <p>More active lifestyles noted.</p> <p>Children and staff absences reduced.</p>	<p>Evidence the impact on pupils and staff through:</p> <p>Self assessment questionnaires for staff and children to produce quantitative and qualitative evidence</p> <p>Qualitative – photographs, video drawings and other creative processes.</p> <p>Reflective and experience based writing</p> <p>In addition to the above the following evidence gained for the key themes</p> <p>Use of pedometers (or more complex instruments in partnership with academic institutes)</p>

## DEVELOPMENT FRAMEWORK

	Outdoor learning focus * indicates Public Health priority	Mapping outdoor learning activity: Indicators	Measuring physical activity and wellbeing: School self assessment and research methods
<p><b>A happy and healthy body</b></p> <p><b>The rationale:</b></p> <p>Children growing food are more likely to eat well and wisely (Bell &amp; Dymont 2008; Page, Passy and Bremner, 2017)</p>	<p><b>Food</b></p> <p><b>Reduction in diabetes, allergies*</b></p>	<p>School has a garden and teachers and children are growing food and eating it.</p> <p>Outdoor cooking space and lessons are delivered there.</p>	<p>Map school learning in the natural environment activities such as growing and preparing food, including composting, sowing from seed, planting and transplanting, harvesting and cooking outdoors across year groups.</p> <p>Plan and record sharing meals – for food awareness, social, psychological and mental well-being. Pupil writing.</p>
<p><b>A happy and healthy body</b></p> <p><b>The rationale:</b></p> <p>Self-care development through dressing appropriately and making good choices.</p> <p>See:  <a href="http://www.cancerresearchuk.org">http:// www.cancerresearchuk.org</a>            and search for sunsmart and  <a href="https://www.gov.uk/government/">https://www.gov.uk/government/</a>            search for keeping children warm</p>	<p><b>Sun and weather awareness</b></p> <p><b>Reduction in skin cancer and colds/flu/illness*</b></p>	<p>School has a store of wellies and coats.</p> <p>Sun protection hats/ lotion</p>	<p>Cross-age buddy systems to cascade knowledge and practice with popular quizzes to test knowledge</p>

## DEVELOPMENT FRAMEWORK

	Outdoor learning focus * indicates Public Health priority	Mapping outdoor learning activity: Indicators	Measuring physical activity and wellbeing: School self assessment and research methods
<p><b>A happy and healthy mind</b></p> <p><b>The rationale:</b></p> <p>Learning in the Natural Environment provides new opportunities to develop confidence and strengthen social skills while learning in a natural place outdoors</p> <p>(Waite et al 2013; Dymnt &amp; Bell 2008)</p> <p>Nature play time has marked effects on children's confidence and creativity</p> <p>(Burdette &amp; Whitaker 2005; Wright et al 2015; Waters et al 2014)</p>	<p><b>Social and psychological well-being</b></p> <p><b>Reduction in depression, bullying etc*</b></p>	<p>Outdoor spaces provided for play and social activities</p> <p>Reduction in instances of bullying recorded, and policy in existence – use of outdoors considered as part of the reduction process</p> <p><a href="http://www.antibullyingworks.co.uk/resources/prevention-strategies">http://www.antibullyingworks.co.uk/resources/prevention-strategies</a></p>	<p>Self assessment questionnaires</p> <p>Practice based research – eg Good from Woods research methods</p> <p><a href="https://www.plymouth.ac.uk/research/oelres-net">https://www.plymouth.ac.uk/research/oelres-net</a></p>
<p><b>A happy and healthy mind</b></p> <p><b>The rationale:</b></p> <p>Enjoyment is the hook that engages children in learning and children report that they enjoy learning outdoors. (Waite, 2011; Waite et al., 2016)</p>	<p><b>Emotional health and well-being</b></p> <p>– <b>happy and positive</b></p> <p><b>Reduction in mental health illness*</b></p>	<p>Learning outdoors benefits emotional wellbeing within the school</p> <p>Ethos, parental reports, staff reports, pupil behaviour</p>	<p>Wellbeing measure through self report questionnaires (section C)</p> <p>Good From Woods framework could help assess qualitative responses and other material gathered. See <a href="https://www.plymouth.ac.uk/research/oelres-net">https://www.plymouth.ac.uk/research/oelres-net</a></p>

## Links + Networks

Networks work together to improve provision of learning in natural environments and create access to its health benefits. Some of the groups and individuals who work in this field in Devon are listed below. If you are from outside the southwest region, this provides an example list of the professionals you may have near you and that are willing to help. They would be able to support development work. Many can provide guidance, develop networks, provide training, suggest ideas for linking curriculum with natural environments, share best practice and advice on funding. The Natural Schools Service at Plymouth University offers consultancy and training and can discuss research possibilities. [aelresnet@plymouth.ac.uk](mailto:aelresnet@plymouth.ac.uk)

Natural Connections and Naturally Healthy Devon Schools Hub Leaders are located in seven areas covering the South West:

### **Plymouth City Council**

Chris Avent  
[Chris.Avent@plymouth.gov.uk](mailto:Chris.Avent@plymouth.gov.uk)

### **Natural Learning North Devon and Torridge**

Louise Graham  
[Louise@naturalllearning.org.uk](mailto:Louise@naturalllearning.org.uk)

### **East Devon District Council**

Tim Dafforn  
[TDafforn@eastdevon.gov.uk](mailto:TDafforn@eastdevon.gov.uk)

### **Torbay and Totnes**

Stewart Biddles  
[sbiddles@oldwayschool.co.uk](mailto:sbiddles@oldwayschool.co.uk)

### **Lighting Up Learning Bristol, North Somerset and Wiltshire**

Sarah Payton [sarah@lightinguplearning.co.uk](mailto:sarah@lightinguplearning.co.uk)  
Jon Attwood [jon@jonattwood.com](mailto:jon@jonattwood.com)

### **The Learning Institute Cornwall**

Peter Butts [peterbutts2000@yahoo.co.uk](mailto:peterbutts2000@yahoo.co.uk)

### **Plymouth University Natural Schools Service**

[aelresnet@plymouth.ac.uk](mailto:aelresnet@plymouth.ac.uk)

### **Plymouth University outdoor and experiential learning research network**

<https://www.plymouth.ac.uk/research/aelres-net>  
[aelresnet@plymouth.ac.uk](mailto:aelresnet@plymouth.ac.uk)

## Other useful local networks and fora include:

### **Devon Local Nature Partnership**

<http://www.naturaldevon.org.uk>

### **DESWG (The Devon Education for Sustainability Working Group)**

<http://www.naturaldevon.org.uk/about-us/structure/forum/devon-education-for-sustainability-working-group-deswg/>  
All local providers are linked in and listed on website

### **Growing Devon Schools**

<http://growingdevonschools.org.uk>

### **Naturally Healthy Devon Schools**

<http://www.naturalllearning.org.uk/NHDSP/>  
<http://eastdevon.gov.uk/countryside/naturally-healthy-devon-schools-project/>

### **Education staff**

in SW AONBs, National Parks and Wildlife Trusts

### **National bodies**

such as Council for Learning outside the Classroom, Learning through Landscapes, RSPB, Institute of Outdoor Learning, Forest School Association etc.

### **School Food Plan Alliance**

[www.schoolfoodplan.com](http://www.schoolfoodplan.com)  
<http://www.schoolfoodplan.com/sfp-alliance/>

## PART 3. RESEARCH AND KEY PUBLICATIONS

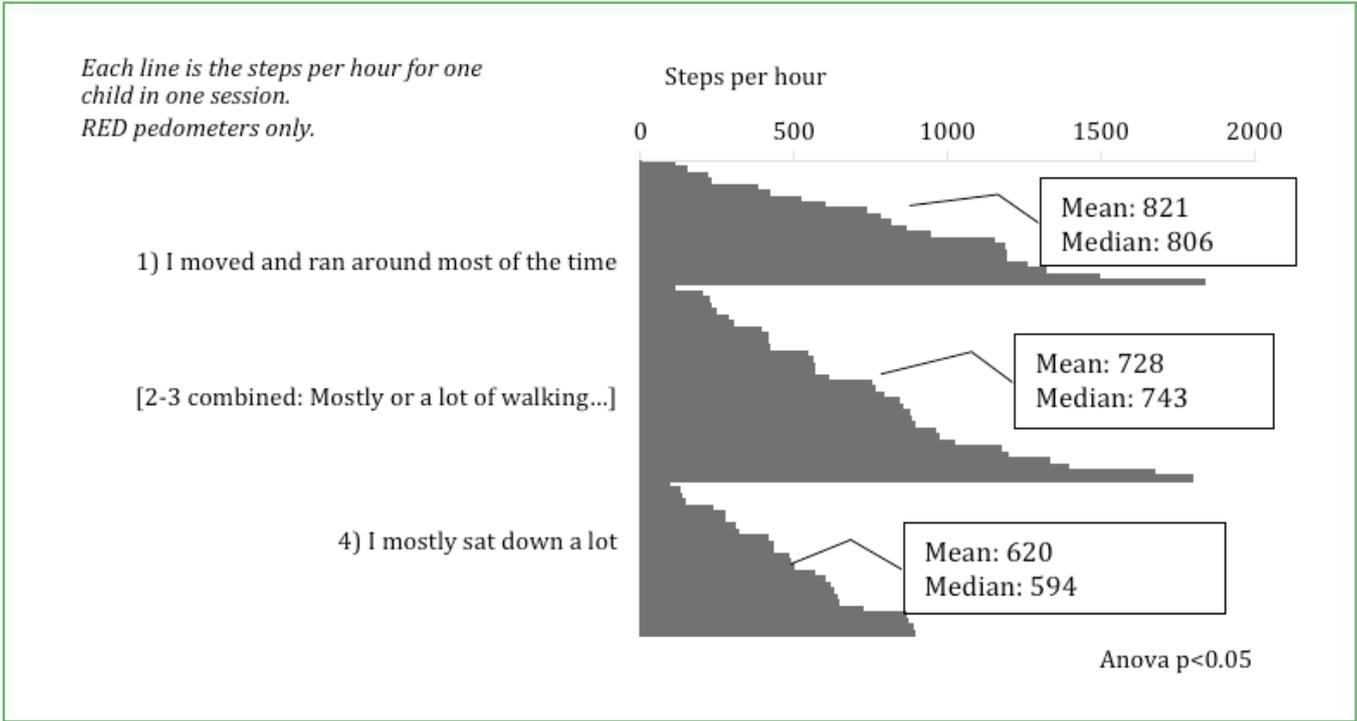
### What did we find out in our research to help develop this toolkit?

Cross-tabulations showed that when children's responses were compared to the total counts per hour for sedentary, light to medium and moderate to vigorous activity levels, they correlated with the objective measurements to a statistically significant degree ( $p < 0.05$ ).

#### Comparison of pedometer, accelerometer data on physical activity levels

Children's definition of how active they were	RED pedometer data	Accelerometers:					
		% moderate-to-vigorous activity (indoors or outdoors)	% light activity level	% sedentary	% moderate-to-vigorous activity (whole session)	% light activity	% sedentary
1) I moved and ran around most of the time	821	15	44	41	13	36	50
2) A lot of or mostly walking...	728	12	44	44	10	37	53
3) I mostly sat down a lot	620	7	37	56	9	32	58





The descriptions of activity level that discriminated most successfully in terms of objective measurement were 'I moved and ran around most of the time' and 'I mostly sat down a lot'. These are in line with national targets for children aged 5-18 to not only spend more time in moderate-to-vigorous physical activity, but also to minimize sedentary behaviour (Department of Health, 2011).

The intermediate categories (light and moderate physical activity levels) when combined provided the best fit with the pedometer and accelerometer data, suggesting that children found it more difficult to distinguish finer grades of activity levels. The self report questionnaire was adapted to include one intermediate descriptor to reflect this.



## Here are some recent publications that provide evidence to show the health benefits of outdoor learning.

- Malone, K. & Waite, S. (2016). Student Outcomes and Natural Schooling: Pathways to Impact report. Plymouth: Plymouth University. Available online at: <https://www.plymouth.ac.uk/research/oelres-net> This collates research evidence and policy links that make the case for outdoor learning.
  - O'Brien, L., Ambrose-Oji, B. Waite, S., Aronsson, J. & Clark, M. (2016) Learning on the move: green exercise for children and young people. In: Barton J, Bragg R, Wood C and Pretty J (eds). 2016. Green Exercise: Linking Nature, Health and Well-Being. Routledge/Taylor & Francis, Oxford. This looks specifically at health benefits and evidence about green exercise for young people.
  - Aronsson, J., Waite, S. and Tighe Clark, M. (2015) 'Measuring the impact of outdoor learning on the physical activity of school age children: The use of accelerometry', Education and Health, 33(3), pp. 57-62. This shows how outdoor learning lessons get all children moving more than break times.
  - Department of Health (2011) Physical activity guidelines for children and young people (5-18 years). Available at: <https://www.gov.uk/government/publications/uk-physical-activity-guidelines>. Advice on the recommended levels of physical activity.
  - Natural England access to Evidence Briefs: Physical Health, Obesity, Physical Activity and Mental Health. Available at: <http://publications.naturalengland.org.uk/publication/5748047200387072>
  - Weare, K. (2016) What works in promoting social and emotional well-being and responding to mental health problems in schools?, Advice for schools and framework document. Available at: [http://www.ncb.org.uk/media/1197143/ncb\\_framework\\_for\\_promoting\\_well-being\\_and\\_responding\\_to\\_mental\\_health\\_in\\_schools.pdf](http://www.ncb.org.uk/media/1197143/ncb_framework_for_promoting_well-being_and_responding_to_mental_health_in_schools.pdf) Recommendations for whole school approaches to wellbeing.
  - Waite, S. (2011, 2017). Children Learning Outside the Classroom: from birth to eleven (1st & 2nd editions). London: SAGE. This covers all aspects and curriculum links for outdoor learning with theory about why it is beneficial.
  - Waite, S., Passy, R., Gilchrist, M., Hunt, A. and Blackwell, I. (2016) Natural Connections Demonstration Project. (NECR215) Natural England. Available online at: <http://publications.naturalengland.org.uk/publication/6636651036540928>
  - Natural Connections (2016): Transforming outdoor learning in schools. Plymouth: Plymouth University. Available online at: <https://www.plymouth.ac.uk/research/oelres-net> This shows how schools can be transformed through embracing a culture of outdoor learning.
  - Naturally Connected Curriculum book (in process). This is being written to support the practical development of curriculum learning progression outside the classroom.
  - Gilchrist, M., Lewis, J. and Waite, S. (2017) Naturally Healthy Devon Schools: Final Report. Plymouth: Plymouth University. Available online at: [https://www.plymouth.ac.uk/uploads/production/document/path/10/10296/NHDS\\_final\\_report7.7.17web.pdf](https://www.plymouth.ac.uk/uploads/production/document/path/10/10296/NHDS_final_report7.7.17web.pdf)
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## OTHER USEFUL LINKS

The following sites offer a range of support, advice or awards relating to learning outside in natural environments:

**Eco Schools** - <http://www.eco-schools.org.uk/>

**Learning through Landscapes** - <http://www.ltl.org.uk/>

**Learning Outside the Classroom – Mark and Badge**

<http://lotcqualitybadge.org.uk/>

<http://www.lotc.org.uk/lotc-accreditations/lotc-mark/>

**Food for Life**

<http://www.foodforlife.org.uk/what-is-food-for-life>

**Countryside Classroom**

<http://www.countrysideclassroom.org.uk/>

**School food plan** - <http://www.schoolfoodplan.com/>

**Forest Education Network**

<http://www.lotc.org.uk/fen/>

**Forest School Association**

<http://www.forestscholassociation.org/>

**John Muir awards**

<https://www.johnmuirtrust.org/john-muir-award>

**Eco-schools and behavioural change awards**

(eg environmental issues within the whole school environment).

<http://www.eco-schools.org.uk/howitworks/>

**Duke of Edinburgh awards (for older students)** -

<https://www.dofe.org/>

**Outdoor Journeys**

<http://outdoorjourneys.org.uk/>

**The Woodland Trust**

<https://www.woodlandtrust.org.uk/get-involved/schools/curriculum-linked-resources/>

Community site development for learning outdoors infrastructure:

<http://www.internationalschoolgrounds.org/>

Community based activity:

**Blue Peter badges** -

<https://www.bbc.co.uk/cbbc/findoutmore/apply-for-a-blue-peter-badge>

**Conservation volunteers**

<http://www.tcv.org.uk/>

**Countryside Classroom**

<http://www.countrysideclassroom.org.uk/about>

Other charities that provide resources for learning outdoors:

The National Trust, The Wildlife Trusts, RSPB, The Woodland Trust and others provide excellent advice for schools.

*PLEASE NOTE: This is only a selection and there will be other useful links within the references and bibliography, as well as within local networks.*

# PART 4. THE TOOLS

## 1. The Research Ruler

A guide to start collecting evidence and how to measure physical activity levels

## 2. The children's questionnaire

(Wright, et al. 2016 Pupil health and happiness in lessons questionnaire).

Measuring individual:

A. intensity of physical activity,

B. physical literacy and

C. wellbeing

Wellbeing measures adapted from:

[https://www.actionforchildren.org.uk/media/3256/a\\_guide\\_to\\_measuring\\_childrens\\_well-being.pdf](https://www.actionforchildren.org.uk/media/3256/a_guide_to_measuring_childrens_well-being.pdf)

## 3. The teacher report

(Wright, et al. 2016 Teacher assessment of physical activity and wellbeing).

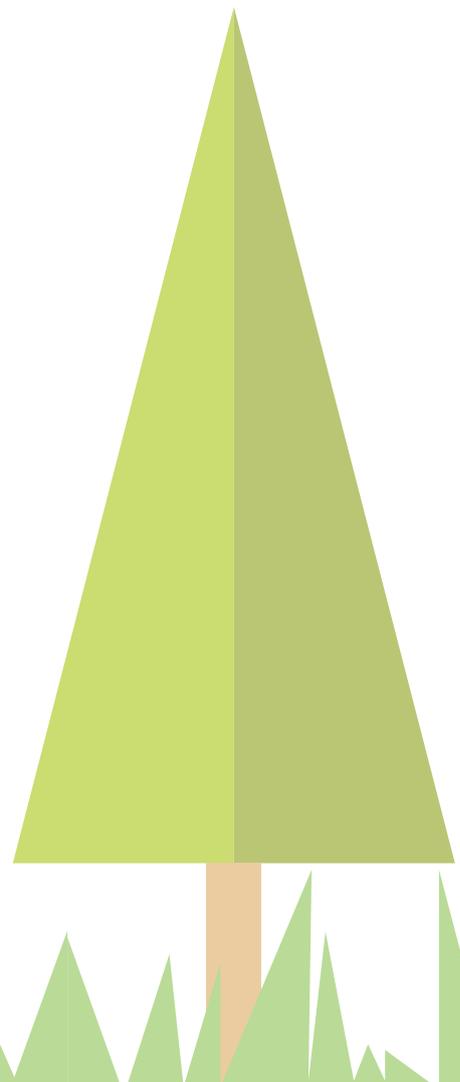
A quick monitor of the physical activity content and the sense of wellbeing at whole class level.

## 4. Blank graph for children's self-report

## 5. Blank graph for charting other behaviours

## 6. Poster summarising healthy school outcomes

## 7. Blank poster for audit





# PUPIL HEALTH AND HAPPINESS IN LESSONS QUESTIONNAIRE

<b>Name and class:</b>						
<b>Our lesson was about:</b>						
<b>Our lesson took place (tick one box)</b>	Indoors in the Classroom	Indoors in the Hall or other rooms	Outside in playground	Outside in woods or in a field		
<b>A1. During this lesson (tick which one you did most of the time)</b>	I sat down a lot	I walked or moved around a bit	I moved and ran around a lot			
<b>A2. During the lesson which of these described how you felt?</b>	I got out of breath sometimes and felt hot	I felt a bit warm at times	I didn't notice any change			
<b>B. What other physical activity did you do?</b>						
<b>C. Thinking about this lesson, show which you agree with</b>	How did you feel during this lesson? [1 means you agree really strongly with the sentence, 3 that you neither agree nor disagree with it and 5 means you really strongly disagree with it.]					
	<b>I felt happy</b>	1	2	3	4	5
	<b>I felt sad</b>	1	2	3	4	5
	<b>I enjoyed my school work</b>	1	2	3	4	5
	<b>I had lots of energy</b>	1	2	3	4	5
	<b>I had no-one to play or work with</b>	1	2	3	4	5
	<b>I felt tired</b>	1	2	3	4	5
	<b>I got on with my friends</b>	1	2	3	4	5
	<b>I felt like I fit in at school</b>	1	2	3	4	5
	<b>I felt good about myself</b>					

*NB Staff should score overall wellbeing by adding the chosen box values but reversing the values for 'I felt sad', 'I had no-one to play with' and 'I felt tired'. (Wright et al, 2016)*

# YOU CAN DRAW OR ADD ANY COMMENTS YOU LIKE TO LET US KNOW MORE ON THIS PAGE!

If you would like to tell us what was the best thing about this lesson/ from the day you can write it here:

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If you would like to draw the best thing about this lesson/ from the day so far you can draw it here:

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**Thank you for all your help with this questionnaire  
and our research!**







# CHARTING .....

Name:

Class:

Lesson:

Target behaviour:																			
	Time																		