

RWL Case-Study

Lessons from Nature

Country

UK

Name of the programme

Lessons from Nature (LfN)

Age of the children involved?

12-16 years

Teaser/Short Introduction (can be connected to the hand-modell, but does not have to)

The Lessons from Nature Project aims to challenge traditional assumptions about how things are made and how systems in the human world operate. Through discovery and activity based learning and Learning Outside the Classroom learners connect with nature and discover that nature can be a mentor that offers insights that can inspire the building of a brighter future. Lessons from Nature combines and understanding of science and society with building the competencies to create change towards a bright green future.

What is the frame? (might be revised by core group)

The core narrative driving LfN is:

Using insights from nature to inspire and build a brighter future.

This narrative is based on supporting young people to critically think about their future and how it can be inspirational. The content and the process of the modules is a means to achieve this. It is recognised that most teachers and learners will have to work within the limits of educational systems but, in so far as possible, we hope LfN will:

- be about young people and their desires, not a top down curriculum designed by adults to meet their needs, or what they think young people need.
- be young person centred, not teacher, school or adult centred.
- be about finding better ways to view the future of young people, rather than predicting the future.
- focus on process rather than answers.
- prepare young people for their future. The 'doing' is a reflective process rather than something practical.
- transcend current views/thinking rather than being progressive.

What are the goals of the programme?

The goal of Lessons from Nature is to 'develop innovative approaches to sustainable development that builds the capacity of schools and organizations working with young people to prepare students to take an active role in building the green economy and society.'

We live in an unsustainable world. Pressure on natural resources to drive the European economy is increasing year on year. We cannot continue to meet the needs and aspirations of Europe without

significant changes to the way we live and consume. There is a need to promote learning that will change the way we design our economies, businesses and products. LfN (Lessons from nature) takes a unique approach to addressing this need.

Nature is inherently sustainable: it recycles waste efficiently, uses renewable power from the sun, is resilient to sudden changes, adaptable over time to new conditions, and self regulates through feedback. A truly green economy and society will share the same characteristics. Such approaches are being pioneered by businesses e.g. Interface, Nike, Wal-Mart, evidencing a real need for this approach to learning.

What values are promoted in the programme?

Lessons from Nature values nature as a mentor and measure for achieving healthy, sustainable societies and economies. As such LfN values nature as a source of inspiration and understanding that can help humanity redesign how it meets its needs, and to a certain extent which needs are essential and which are a luxury. LfN falls between both intrinsic and extrinsic value sets as explicated by Common Cause. In discovering how nature works self-direction and universalism values are to the fore. In seeking solutions, however, achievement and even some hedonism values are presented.

Which competences are promoted that empower learners to shape a sustainable future?

LfN developed a competency framework focused on:

- Understanding lessons from nature.
- Discovery – discovering how nature works and how nature's principles can be applied to redesigning human systems.
- Critical thinking – applying new ways of thinking to environmental and social issues; critically reflecting on current approaches to sustainability and considering their value.
- Creativity – designing new solutions to old problems; designing solutions that are attractive and inspirational.
- Sharing – communicating ideas and visions for now and the future.
- Reflection and evaluation – knowing what you have learnt and the changes in understanding that are taking place.

A competency based learning wall was used to assess pre and post activity changes in learner competency.

Which of the specific scientific concepts does the programme relate to?

LfN has a strong focus on system science concepts, with a particular relevance to ecology. LfN developed the following six principles based on a system understanding of how ecosystems work. These closely relate to the RWL science concepts of cycles (waste=food), change (nature optimises; nature is adaptive) and energy flow (run n solar income)

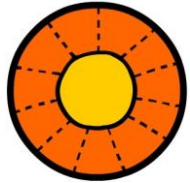
The first three principles form the foundation. These three work synergistically. The second three principles add increased benefits so long as the first three are implemented.



Waste equals Food: In nature everything is cycled so what looks like waste is actually food for the next cycle. For example, dead tree leaves decompose to become food for insects. This insight can be applied to turn current linear human production systems into closed loop systems in which waste is eliminated.



Multiple Benefits: In nature organisms have multiple benefits; they do not simply have one purpose. The goal of a tree is to reproduce to provide the next generation and in doing so it also provides food for insects, shelter for animals, nutrients for the soil from their decomposing leaves, turn carbon dioxide into oxygen, and help regulate temperature and rainfall.



Run on Solar Income: Nature runs on renewable energy, it does not use more energy than it can produce itself. Nature does not create energy sources that pollute the atmosphere, and designs its processes to work efficiently.



Diversity gives Strength: Nature relies on a large variety of species, systems and organisms that allow it to withstand external shocks. Diversification effectively reduces risk.



Nature Optimises: Nature accepts limits but is not restrained by them. Nature finds creative solutions to provide multiple services without damaging its own services. Nature lives of its interest, not its capital.



Nature is Adaptive, Dynamic and Responsive: Nature never stays the same, it is constantly changing and adapting, responding to feedback. What worked in the past might not work in the future.

Which ecological problems are involved, if any, and how? (Refer to mindmaps of 9 planetary boundaries)

The main focus within the learning activities are biodiversity and climate change. Students use activities to learn from the natural world and understand its operating system. This new learning is applied to redesigning human systems and at the same time tackling issues such as climate change. Biodiversity and climate change is chosen because they are areas familiar to students, however, the LfN principles could be applied to any of the planetary boundaries when considering solutions that maintain planetary systems within limits and meet society's needs.

Transferability: Which different areas of learning are included and how?

LfN starts with the learners own experience. This is engaged through outdoor learning activities which explore how nature works. Further activities extend the learning about natural systems to learners own life, for example, considering how food productions systems operate or how to redesign a shoe based on LfN principles. In this way LfN builds from the learner themselves and connects with living nature, the man-made environment and the learners' community. LfN does not explicitly take a global approach, however, the LfN principles are easily scalable to a global level.

What educational strategies (learning models, methods, etc.) are used in your programme?

LfN ensures good choices get made, not to say what those choices are. We all have our own dreams for the future and of course as we grow they change and develop. How can we keep those dreams alive? LfN believes we can by learning and applying the same principles that nature has used for over 4.5 billion years to design human systems that are abundant, beautiful and resilient. To do this we follow four steps:

inspiring the learner, helping them discover how nature works, understanding how nature's principles can be applied to human systems, and finally applying these new insights to their own lives.

This simple model can be applied again and again and again. By learning how nature works, we can find solutions that continue today, tomorrow and always. These solutions are not limited to the few; nature's solutions can provide opportunities for all regardless of wealth or location.

LfN starts with young people. It does not tell young people what they can or cannot do, rather it asks what are your dreams, how can we get you there? LfN connects with individuals and communities real needs, desires and dreams. LfN does this through reconnecting with the natural world, however not in a way that is separate from people's real world concerns of jobs, housing and health care.....day trips to the woods are great but seldom is it asked what relevance the woods have to our daily lives in anything other than a superficial way.

LfN asks what the woods/nature can teach us about health care, running economies on limited resources, providing homes that self cool and heat. Because nature does all these things far better, far more effectively and far more beautifully than humans do. Now there is a lesson worth going into the woods for.

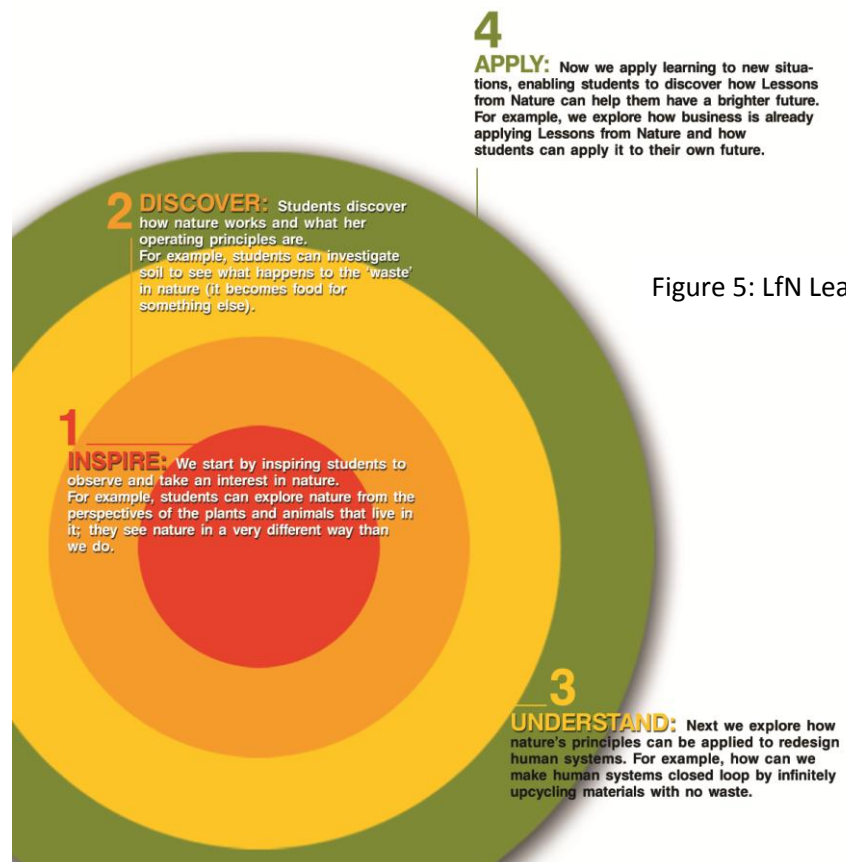


Figure 5: LfN Learning Model

How is the programme evaluated? How do you know the programme achieved its educational goals?

Assessment is part of the LfN learning process, not an additional activity that appears at the end of the Modules. Assessment is integrated into the modules because it is important that learners assess and reflect on their own learning as a critical part of the LfN process.

LfN is not about traditional school knowledge, and as such traditional assessment approaches are not always valid. LfN is a learning process in which students are aware of and reflecting on the meaning of their learning (What have I done? What does it mean for me? etc). Reflection fits into Kolb's learning cycle on which the Modules are based and it supports and adds value to the activities in each Module.

At the end of each section there is a reflection task. Learners are asked to add notes to the Reflection Sheet including how the learning could impact their future. In addition to reflecting on their own learning and how it has progressed through taking part in the Modules learners will also assess competency and whether the modules have challenged and influenced their view of their future.

Describe the programme.

Included resources / materials / tools.

LfN provides modules for teachers to use including worksheet and assessment methodologies. A range of online video resources are also accessible.

The core modules are:

- Introductory module.
- Waste equals food.
- Multiple benefits.
- Diversity gives strength.

See project website www.lessonsfromnature.org for full details.

Photos or videos, logos





APPLY

UNDERSTAND

DISCOVER

INSPIRE



INTRODUCTORY MODULE

Introductory module



DISCOVER

ENVIRONMENTAL IMPACT ASSESSMENT (20 mins)

Use biological testing equipment to complete an Environmental Impact Assessment of the proposal to replace natural trees with concrete trees.

Assessments to be included should be:

- Benefits associated with leaves on the trees (if any)
- Benefits of the branches and trunks (if any)
- Benefits of the roots (if any)
- Benefits of dead leaves, twigs, nuts, berries and all the other 'messy stuff' on the floor (if any)
- Any other reasons that natural trees may have hidden benefits over concrete trees



IM4 Environmental Impact Assessment guidance
IM5 Environmental Impact Assessment report



REPORTING BACK (5 mins)

Critically examine the implications of the proposals;

- What are the benefits of the trees?
- Would concrete trees be an appropriate replacement?
- What impacts would there be with concrete trees?
- Using the findings, should the landowners replace the forest with concrete trees?



REFLECTION (5 mins)

You have discovered that there are Multiple Benefits in nature. Add notes to the Reflection Sheet and chart your progress on the Learning Wall.

Visit the Share page of www.lessonsfromnature.org to comment on the activities you have taken part in.

The Multiple Benefits insight can also be found in the human world. Explore the insight further by taking part in Understanding Multiple Benefits activities.







APPLY

APPLYING INSIGHTS FROM NATURE

OBJECTIVE
Apply your knowledge of the insights Waste equals Food, Multiple Benefits and Diversity gives Strength to current products and production systems

FUTURE VISIONS (10 mins)
What is your vision of the future, is it frightening or fabulous?

- What is there in the future that some people find frightening? (record these on the hazard triangles)
- What has been learnt from nature today that is fabulous? (record these on the leaves)






IM17 Keywords

DESIGN ACTIVITY (20 mins)
Work in a group to design either a car, a phone or a trainer.
Apply your knowledge of insights from nature that you have developed throughout the Introductory Module to analyse the product and it's design.
How could the product be improved using insights from nature?






IM18 Design Cards

12

Sample activity