



Nature Intelligence

Nature Intelligence: Exploring Applications in the Field of Youth Work

Edited by Thomas Albers





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Welcome dear readers

Nature Intelligence has been defined in our project as ‘a multidimensional set of human qualities to connect to nature in a cognitive, emotional and spiritual manner, and to actively use these qualities to support both one’s personal well-being as well as the well-being of nature and the planet’¹.

This concept is rather innovative as it proposes a holistic approach to the promotion of human wellbeing and pro-environmental behaviour: it incorporates the four human domains of cognition, emotion, spirit and behaviour. These individual domains can be recognised anywhere in the field of youth work and their applications go far back in time. Our nature intelligence concept has proposed that all four domains should be addressed in order for humans to have an optimal connectedness to nature. In fact, nature intelligence is described as an ‘emergent property’, meaning that it is more than the *sum of its parts*. When all four domains are developed within young people, a synergy effect occurs similar to a rainbow which appears when the right elements meet at the right moment and right place.

Aim of this publication

In this publication we explore how the concept of nature intelligence, as proposed in our theoretical framework¹, can be applied in the field of youth work. We aim to place the concept into a broader theoretical background by exploring the flower model and each of its four domains from a youth work setting. By doing this we also hope to give credit to the wonderful work already done and connect it to current practices and traditions that address similar aims of fostering a strong human-nature connection. Other than our more theory-based publications, we have developed several practical manuals and tools² that help youth workers and trainers to apply our nature intelligence concept. The current publication should help readers better understand how the nature intelligence concept can be applied by placing it in a wider context.

For whom is this publication?

We reach out to all youth workers, educators, administrators, volunteers, programme developers or researchers who want to work with nature intelligence, either from a practical or a theoretical perspective. Those readers who are more interested in the applied aspects of the concept will find examples in traditions and methodologies that nature intelligence borders or overlaps with. Readers that are interested in the more theoretical perspectives will understand how nature intelligence fits within existing traditions and lines of thought regarding the human-nature realm.

How to use this publication

This publication consists of four articles proposed by experienced youth workers and programme developers, each reflecting and deepening the knowledge of the Flower Model of Natural Intelligence. Each partner dived deeper into one of the four domains: emotion, cognition, spiritual and action.

Each article starts with the key messages, highlighting its main content, followed by a short introduction to the topic. Then the authors reflect on existing theories/knowledge. They offer concrete examples of activities or case studies. They present individual reflection questions for the reader on each of the four NQ dimension. Finally, there are suggestions for further reading.

We assume that the readers of this publication are familiar with the general nature intelligence concept, which is described in more detail in other publications, such as the *Practice Brief* (this can be accessed on www.natureintelligence.eu/publications). For means of coherence, at the end of this publication (Appendix A), a brief overview is provided of each of the four domains of nature intelligence and of each of the 12 unique nature intelligence competencies.

1 Van den Berg, A.E. & Albers T. (2022). *Nature Intelligence in Youth Work: Conceptual model, measurement scale and critical success factors*. Aalten: Anatta Foundation.

2 On the project website www.natureintelligence.eu you can find a manual for your workers aiming to design nature intelligence youth programmes as well as an online self-directed training course and a curriculum for a youth worker training course

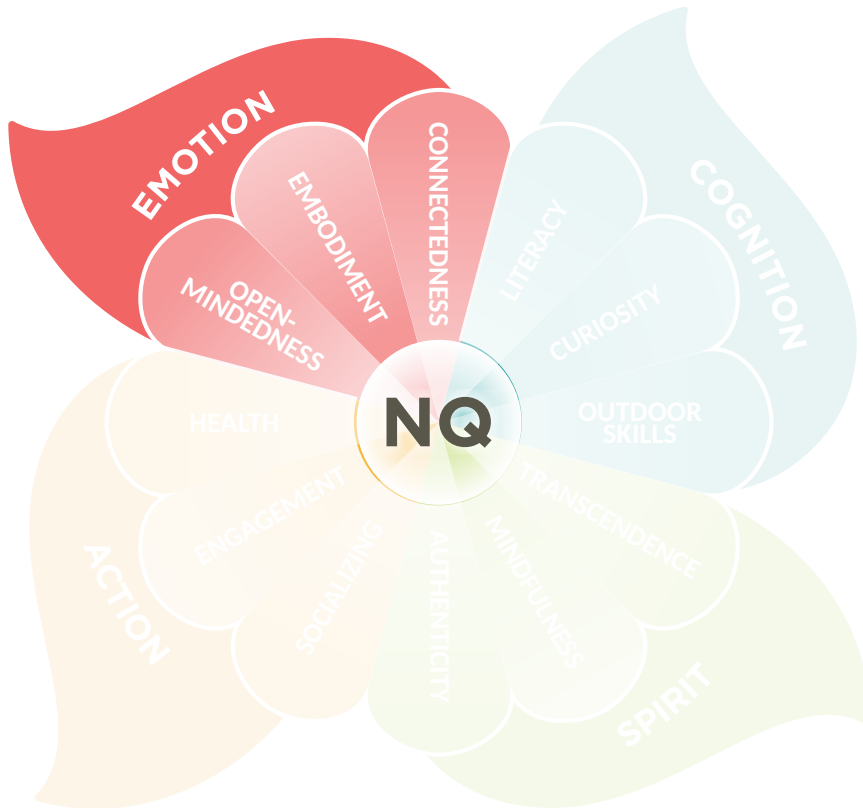
The background is a solid light green color. Overlaid on this are several overlapping, semi-transparent white and light green shapes that resemble stylized, rounded mountain peaks or abstract architectural forms. These shapes are layered, with some appearing in front of others, creating a sense of depth. The overall aesthetic is clean, modern, and nature-inspired.

Four chapters
on the four dimensions
of Nature Intelligence

Chapter 1: Emotion Dimension

Authors: **Francesca Salmeri, Marcovalerio Battaglia & Angelica Paci**

The Emotional aspect evolves around the feeling of connectedness to nature. It reflects a sense of kinship and an affective individual experience of connection with nature, both psychologically and physically, through direct embodied experience and an open-minded approach towards both the positive and the negative aspects of nature.



*... I feel that the sand lightly streaked
from the gentle touch of the wave
and the wind is like
my palate, it's like
the hollow of my hand
where the touch is refined*

Gabriele D'Annunzio, Meriggio vv.75-80,
Milano, 1903



Key messages:

This chapter gives a brief description of what our understanding of Nature Intelligence is, mainly focusing on one of its dimensions: the emotional dimension with its three competencies connectedness, embodiment and open-mindedness.

Already ancient and Romantic philosophers promoted the concept of nature as a whole to which humankind belongs. This article wants to give an overview on the connection between human beings and nature, which manifests at a physical and psychological level with a sense of belonging to the natural world. The relation between humans and nature is closely connected to the relation of individuals with themselves, their emotions and their inner reality.

This chapter showcases two different approaches in the context of experiential learning: Adventure Therapy and learning through the 'morality by types' roleplaying game as ways to develop, through experience, Nature Intelligence and above all its emotional dimension.

Introduction

In our Erasmus+ project, Nature Intelligence (NQ) is defined as 'a multidimensional set of human qualities to connect to nature in a cognitive, emotional and spiritual manner, and to actively use these qualities to support both one's personal well-being as well as the well-being of nature and the planet' (Van den Berg & Albers, 2022).

NQ is an integrated multidimensional concept that combines elements of various types of nature-related intelligences such as the one theorized by Howard Gardner (1983). Gardner describes intelligence in general as the 'biopsychological poten-

tial to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture'.

According to Gardner, people don't just have an intellectual capacity, rather they have **many kinds of intelligences** which are autonomous and interdependent. This means that all intelligences are equally valid and important and though significantly independent of one another, they do not operate in isolation. He identified nine intelligences: logical-mathematical, linguistic, bodily-kinaesthetic, musical, spatial, naturalistic, inter-personal, intra-personal, spiritual.

Relating to the inter and intra intelligence of Gardner, Daniel Goleman went deeper into the concept of **Emotional Intelligence** (EI), which is the capacity of individuals to identify and regulate their own emotions, as well as the emotions of others (Goleman, 1995). Simply said this means that individuals with a well-developed EI know what they are feeling and thinking and know how it impacts the action they are involved in, understanding that they can use this information to manage themselves better.

Goleman states that EI is made up of certain 'emotional competences' understood as abilities that allow individuals to have authentic and positive relationships.

These emotional competences are:

- **Self-awareness** - the ability to recognize one's own emotions, drives and patterns and their impact on others
- **Self-regulation** - the ability to manage one's actions, thoughts, and feelings in flexible ways to get the desired results
- **Motivation** - the ability to set goals and follow them through and having the strength to keep going in the face of obstacles
- **Empathy** - the ability to accurately notice and understand the emotions of others and 'read' situations appropriately
- **Social skills** - the ability to take one's own emotions, the emotions of others, and the context to manage social interactions successfully.

In our understanding Nature Intelligence (NQ) fits within a broader view of intelligence as a multiple set of abilities and it's a new concept that builds upon existing ideas on intelligence in general. This moves us to assume that NQ is a capacity that is both an inherited potential and an acquired competence. It can, as such, be effectively influenced by educational programs, habits and context.

Within this broader view, NQ in itself can be seen as a multidimensional concept that combines nature-based competences in the cognitive, emotional, spiritual and action domains.

What do we mean by emotional domain?

The emotional dimension describes the relationship between individuals and nature from the emotional point of view. It reflects a sense of kinship and an affective individual experience of connection with nature, both psychologically and physically, through direct embodied experience. From this point of view, individuals **feel connected to nature**, recognize themselves as **being part of a whole system** and **feel they belong to the natural world**.

This means that human beings don't immerse in nature from the outside, which would imply they consider themselves to be something different, but rather they return to it as part of a whole from which they had moved away. Although it is customary to use the expression 'to immerse in nature' to identify feelings of vicinity to nature, we thought it would help to better understand what we mean when we refer to the emotional dimension of NQ.

NQ and its emotional dimension belong to all human beings and can be spotted, developed and nurtured by all individuals. Just as there are cycles in nature, such as seasons and the alternation of light and darkness, human beings, who are part of the natural world, equally experience the succession of cycles of either time or emotions. Each individual experiences in their life's diverse transitions from an emotional state, which influences their way of reading and understanding reality. People who are able to recognize, understand and appreciate the cycles of nature, such as the

seasons or even the simple flowing of time during the day, are more inclined to recognize and accept the cycles and changes that occur within their own bodies, as they identify themselves as being part of the natural world.

Experiencing pleasant and unpleasant emotions in nature

The emotional dimension defines the felt-sense aspect of the connection that manifests between human beings and the natural dimension to which they belong. It is evident that nature is a privileged setting where individuals experience emotions. Let's think of the **joy** that can arise while admiring a natural landscape or feelings of freshness and freedom when on a hot summer day we dip into the waters of a lake, a river or the sea. Or even the feeling of **inner peace** when walking through the woods surrounded by the sounds of nature, or the feelings of **wonder and astonishment** when contemplating unexpected features of life such as the colours or scents of nature.

However, nature can also be the place where individuals experience **emotions of fear, anxiety and disgust** and these are all equally related to how individuals are able to connect with nature. An individual with a well nurtured NQ, in fact, does feel at least a little amount of disgust in presence of a dead animal and is able to recognize that feeling and contextualize it, to accept it and to feel curious about it. After all, a dead animal is the other side of the same coin; it is part of the same natural world that raises emotions which are more acceptable like the feeling of pleasure when we inhale the fresh mountain air.

How individuals see nature

Therefore, how individuals see and relate to nature determines whether the emotional dimension of NQ is well developed. In the example of the dead animal, it isn't about feeling disgusted or not, but rather the capacity of individuals to acknowledge their disgust and at the same time acknowledge that any judgement of value concerns only external labels that don't reflect the natural events of

life. That emotion of disgust, in this case, has a biological protective function against contamination and threat and has nothing to do with the appreciation of that phenomena.

Experiencing in nature

In the field of non-formal education, nature offers a variety of experiences that are incredibly useful for young people to thrive. The same activity done indoors or outdoors in a natural setting will bring different results. In fact, when young people are asked to experience, reflect and share with their peers in nature, they are invited to return to their own nature and connect, rather than to estrange and disconnect.

The need to connect with nature

Of course, in our contemporary society this aspect is largely underestimated. Nowadays, profit is much more valued and young people are forced into a system that requires them to move away from the natural cycles of life in favour of a faster speed that has an impact also on their wellbeing. This is why acknowledging the emotional dimension of NQ means acknowledging **the need of individuals to return to their natural dimension**, rather than immersing in something completely new. The emotional dimension of Nature Intelligence is something that definitely belongs to humans. Nature is not something different from us. We are nature and as such it's of vital importance that young people return to it in order for them to reach a psychological and emotional state of well-being.

Develop the core competencies: connectedness, embodiment, open-mindedness

The emotional dimension of Nature Intelligence consists of three sub-dimensions (competencies):

- **Connectedness** is the ability of individuals to “connect” to nature, to take care of it and to identify themselves as part of it;
- **Embodiment** is the appreciation of being in direct contact with nature through all the senses, also in presence of adverse conditions (such as, for example, being exposed to rain or a rough sea).
- **Open-mindedness** is the capacity of being curious about all aspects of nature, including the ones that might be scary or disgusting.

These three subdimensions are all interconnected and can manifest to different extents in each person. For example, an individual can have a more developed open mindedness rather than embodiment, thus can show curiosity for natural phenomena and at the same time just partially enjoy being in contact with unpleasant aspects of nature, such as, for example touching dirt or diving into cold water.

The three sub dimensions are all influencing the emotional sphere of individuals and their interconnection can be understood if analysed more specifically. In fact, experiencing a true connection with nature implies that individuals convey it through their senses and that their open-mindedness is triggered by it.



Imagine for example when, during a walk in a natural setting, individuals get in touch with mud, dust, wind or a cool sensation on their skin. In this very moment the connection that individuals experience with the environment is made possible because of their open-mindedness and

the direct contact with the natural elements through all their senses. In this case the senses become the privileged access to a relation with nature, that is not only physical and sensorial but also, and at the same time, emotional.

It is through emotions and feelings that individuals can experience a real connection with nature, through open-mindedness and embodiment. In natural settings, when in the presence of certain external conditions such as a strong wind or a steep climb, individuals undergo an inner change by processing emotions that are triggered by these conditions. In fact, they may experience anxiety for not having reached the peak yet or might feel frustrated for not having enough clothes to keep themselves warm.

Nature as a challenging learning environment

At the start of an experience in nature during Adventure Therapy programs, participants may feel the exertion of accepting the feeling of discomfort that the situation provokes and want to remain as much as possible in their comfort zone and. However, staying in that situation allows participants to experience a series of emotions that may give rise to inner change and a more conscious behaviour. The walk that started with discouragement and discomfort can therefore turn into an experience of personal development and growth, where participants enjoy reaching their goals and appreciate the external conditions that were considered adverse at the beginning of the experience.

From this point of view, nature becomes a preferential learning environment, as it challenges the person to accept it. Given the possibility for individuals to experience the environment in a natural and unfiltered way, these three subdimensions can be seen as traits that can be developed rather than innate and unchangeable.

Experiential learning approaches to develop emotional competencies

As mentioned before, the relation individuals have with nature is partly based on the personal

meaning that they give to the emotional manifestations they have in certain situations or during certain experiences in nature.

In educational contexts, when the learning process happens in a natural setting, the tasks and results achieved seem to be more intense and integrated. Specifically, here we refer to two different approaches in the context of experiential learning: Adventure Therapy and learning through the 'morality by types' role playing game.

By Adventure Therapy we mean individual and group adventurous activities that are combined with psychotherapeutic interventions, aimed at enabling the rehabilitation, growth, development and improvement of physical, social and psychological well-being of individuals. Adventure Therapy is an approach that promotes the well-being of individuals while contributing to the development of the emotional dimension of their NQ, by leveraging on their emotional responses when placed in a natural context and by raising awareness on the latter.

Examples of adventurous activities

Immersion in nature

In September 2017, we were running an Adventure Therapy programme at the Circeo National Park in Italy, during which we invited participants to immerse in nature, to breathe deeply and to use all their senses to be in contact with the natural environment around them. After this experience, in addition to the specific individual learnings, we noticed that many participants wanted to return to that natural environment. They all said they felt a deep emotional bond with the moment in which they could fully experience nature. This sensing and reflecting activity has, to a certain extent, triggered and amplified the emotional subdimension of participants' NQ. This consequently also results in an expansion of this specific subdimension.

Hike in nature and solo time

When, during the programme, we went on a two-day hike and launched a solo moment, we asked participants to focus on the personal intention they had set at the beginning of the experience.



Among the participants, there was Leana., a 14-year-old girl, who had always shown a resistance to get physically in contact with nature since the start. She was always refusing to sit on the ground, repeatedly cleaned her hands with wet wipes every time she was in contact with any of the natural elements and was always complaining when having to walk in muddy terrain.

At the beginning of the solo moment, while reflecting on herself, she was initially standing and little by little she first crouched, then sat and finally laid on the rocks and was hugging one of them. Later, when sharing her reflection during the solo moment, she said she felt like being held by the stones, as if they were human beings or as if she had become a stone. She felt as if she belonged to the group of stones.

Her sensory experience with the rocks gave rise to an insight: the resistance that she had showed towards nature was the same resistance that was keeping her away and distant from people. Embracing the rocks helped Leana become more aware of her emotions and behavioural patterns and allowed her to make the change she needed to feel part of the group. The proximity to nature helped her relate to it in a completely different

way. Since then, she has enjoyed sitting around the bonfire at night and waking up early in the morning to contemplate the sunrise. Also, something had changed in her posture: from that moment, she stopped complaining about the environment around her. To a certain extent she had anthropomorphized nature and this experience has helped her feel part of nature and no longer disconnected from it, herself or others.

Examples of roleplaying game

With regards to the 'morality by types' roleplaying game, we'd like to talk about the one we use with young people, which is based on a readaptation of the novel "The Lord of the Rings". We use this metaphor for personal development and for the inclusion of all the group members.

Though this adventurous metaphor, young people are invited to explore themselves, the environment and others. The activities are based on the challenge by choice principle and involve young people at a physical, cognitive, relational, and emotional level. This emotional involvement increases young peoples' NQ, through the development of the subdimensions of the emotional dimension - Connectedness, Embodiment and Open-mindedness.

In the metaphor, participants are divided, according to their age, into hobbits, dwarves, humans and elves, each of them with different features, strengths and pitfalls. The setting of the Lord of the Rings immediately drives young people to feel a sense of belonging to nature and to identify with it. In particular at the beginning of the metaphor, children aged 10-12 are told that evil orcs have destroyed the village of the people that were living in the land they are exploring. They are assigned the task of rebuilding the village and making shelters with the natural elements they can find around them.

Notwithstanding the strong resistance due to fears of getting dirty, ruining their clothes, or being uncomfortable because they are not used to staying in nature, they built their shelter with bark, branches, stones, moss and trunks, making it the headquarter of their community for the entire duration of the experience.

During the activity we noticed that some children were fast in collecting material and some others were intimidated by having to interact so much with the natural environment. As time passed by, all participants were becoming more and more confident with the surroundings and their resistance was diminishing until it disappeared the day after. Indeed, having experienced and explored nature was what made them change their minds and functioned as a trigger for their curiosity (open-mindedness) and their senses (embodiment). This trigger contributed to changing their emotional perception towards nature. What was previously perceived as frightening and/or disgusting, was then being accepted and appreciated.

Personal reflection questions for the reader on the emotional dimension of NQ

- What makes you feel emotionally connected to nature?
- How do ecological disasters, climate change, animal extinction etc. impact you at an emotional level?
- To what extent are you curious to investigate natural phenomena, despite it being pleasant or not?
- To what extent do you listen to the signals of your body (adequate alternation of working and resting time or of movement and stillness, etc)?
- Think of a moment you have experienced in nature. How would you recount it to others?
- Which of the practices/activities you are currently carrying out with young people can leverage on the emotional dimension of NQ?
- What experiences do you think are useful for developing the emotional dimension of NQ?

Suggestions for further reading

For further reading, we suggest 'The Veil of Isis: An Essay on the History of the Idea of Nature' by Pierre Hadot (2002), that is the history of the concept of nature from antiquity to today. Many authors and theories have highlighted how the relation between humans and nature is closely connected to the relation of individuals with themselves, their emotions and their inner reality. Many authors have also stated how much wellbeing is related to the physical and emotional proximity to nature.

There are many examples of how ancients already considered nature as the privileged seat for learning. Let's think for example about the presocratic philosophers, and their reflection relating to the natural world. The ancients were immersed in nature and considered it to be the foundation and mother of all human beings' ideas, emotions and features. Likewise, pagan religions personified their divinities with natural elements, so as to better understand and accept weather conditions that provoked both fear and wonder.

What follows are few references of authors and possible sources of inspiration for better understanding NQ and its emotional dimension.

'The aim of life is to live in harmony with nature'

(A famous quote of Zeno of Citium, ancient Greek philosopher, 334/263 BC.)

During the Hellenistic period, around 300 B.C, a philosophical school of thought called Stoicism was developed. The way Stoics looked at nature is incredibly similar to NQ's emotional dimension. The Stoics saw in nature the manifestation of Logos, an early spirit, of which any tree, flower or human being is a manifestation.

What NQ has in common with the Stoic approach is that both the elements in nature and human beings all share the same structure and emotions. Being in contact with nature can show humans how to feel free from their fears and connect individuals not only to nature but also to themselves and to their deepest and most complex emotions (Hadot, 2002).

In one way or another, the history of human thought has always been influenced by its relation to nature, such that during the industrial revolution and the development of modern society, many authors have suggested a return to pantheism and to a concept of nature as a whole, to which individuals return to rather than randomly immerse in. Let's think for example of the theories proposed by Denis Diderot, Jean-Jacques Rousseau or, long before that, by Michael Montaigne.

A great example of literature that goes back to the relation between humans and nature is that of Johann Wolfgang von Goethe. During his entire career, this famous poet and philosopher carried out a strong naturalistic interpretation of the world, by underlining that the bond between individuals and nature is based on feelings and emotions. In one of his most famous works 'The Sorrows of Young Werther', through the words of its main character, Goethe narrates the sentimental and mystic experience of his physical, tactile and visual contact with nature:

When the beloved valley streams around me, and the lofty sun rests on the surface of the impenetrable darkness of my forest with only single rays stealing into the inner sanctuary, then I lie in the tall grass beside the murmuring brook, while on the earth near me at thousand varied grasses strike me as significant; when I feel the swarming life of the little world between the grass blades, the innumerable, unfathomable shapes of the tiny worms and flies, closer to my heart [...]

O my friend! – then when twilight invests my eyes, and the world about me and the heaven above me rests wholly in my soul like the image of a woman one loves – then I am often all longing and I think: ah, could you express all that again, could you breathe onto paper that which lives in you so fully, so warmly, so that it would become the reflection of your soul, as your soul is a mirror of the infinite God! My friend – but this experience is beyond my strength, I succumb to the overpowering glory of what I behold (Goethe, 1774)

The words of the poet perfectly express that feeling of connection, wonder and true affection that ties humans to nature and its elements. The sense of belonging humankind has in nature has often been highlighted in philosophy. The question in today's society is understanding how much individuals are aware that they are biologically and emotionally part of nature itself.

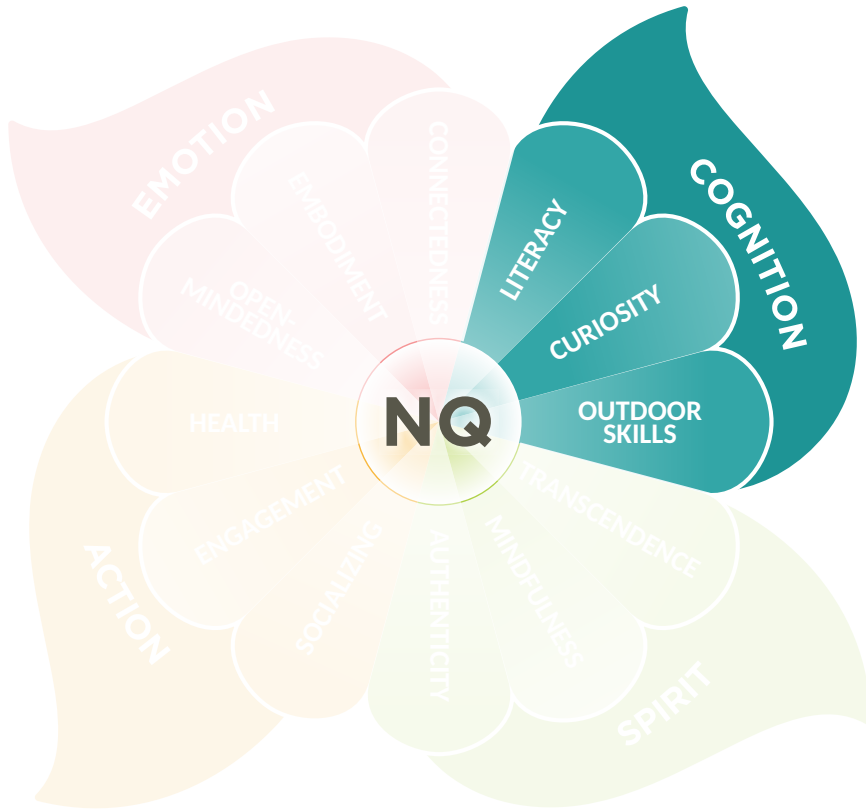
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Chapter 2: Cognition Dimension

Author: **Kim de Rijk**

The domain Cognition taps into the 'classic' competencies that are the focus of environmental education: environmental knowledge, attitudes and behaviours. NQ emphasizes the intuitive and experiential side of these competencies



Key messages:

Cognition consists of multiple layers. In order to develop this dimension further, the cognitive base needs to be strong (based on Taxonomy of Bloom)

Cognition can be further developed in relation to the other dimensions of Nature intelligence

The level of cognition is dependent on age and general (brain) development

Introduction

When thinking about intelligence in general, cognition often has a role in how most people would perceive intelligence. The meaning of cognition in the general dictionary is described as follows: *the mental action or process of acquiring knowledge and understanding through thought, experience, and the senses*³. In recent history, cognition has been considered an important source of intelligence that we can measure and monitor relative-

ly well. The concept of cognition is more often used in the way we measure general intelligence (IQ) and school results.

For the concept of nature intelligence (NQ), cognition is one of the four dimensions we think of as essential. Probably the most measurable and concrete dimension for those who are new to the concept of NQ. However, what is cognition without context? Learning by thought, experience and senses is something we can relate to the spiritual, emotional and action dimensions of the NQ. Therefore, in the context of Nature Intelligence, the cognition dimension of NQ cannot be seen as completely separate, but always in relation to the other dimensions.

Skills on Bloom's Taxonomy to understand how we learn

The cognitive dimension describes the environmental knowledge about nature and the attitudes and behaviours towards nature. To better understand the cognitive dimension we can use Bloom's Taxonomy (figure 2.1) as a general framework (Bloom et al, 1956). This model was developed in the 1960's and has been used in the educational field a great deal. The model classifies learning objectives at different levels.

Bloom's Taxonomy

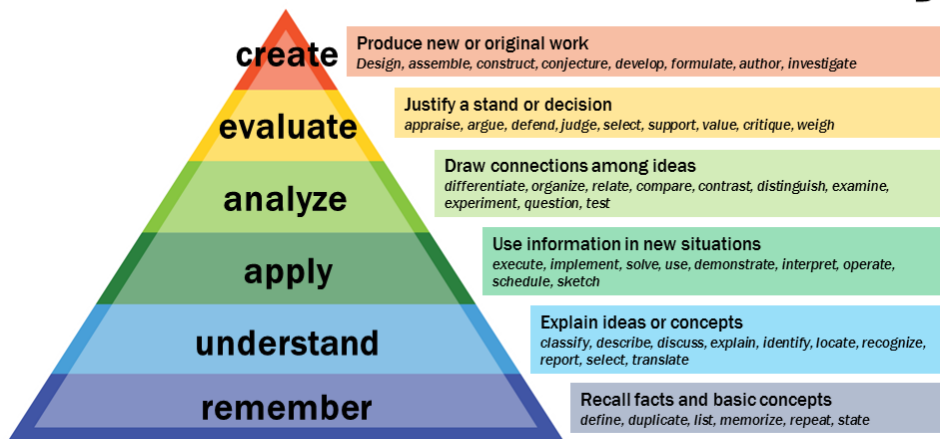


Figure 2.1 Bloom's Taxonomy (Bloom et al., 1956), Vanderbilt University Center for Teaching

3 "Cognition". Lexico. Oxford University Press and Dictionary.com. Retrieved 7 May 2022.

Most learning is knowledge based and starts with remembering and understanding ideas, concepts, facts and their interrelatedness. A higher order cognition is when basic knowledge can be applied to new situations, after which it can be analysed and connections can be drawn between ideas and concepts. The top of Bloom's Taxonomy shows that the higher cognitive skills are evaluation, appreciation, arguing and decision making. To be able to do this properly, the lower order of cognitive skills should be developed and satisfied as, for example, without basic understanding of concepts and facts it is difficult to make proper analyses. This also shows that all levels in Bloom's Taxonomy are interrelated and interdependent. The highest order cognitive skill contemplated is creativity, meaning that new or original work can be produced, which may be considered one of the deeper purposes of human existence. Creation is part of evolution and us humans, our societies and nature are constantly producing novel things. In a cognitive-based learning programme, one can start at any level of the Bloom's Taxonomy, there is no prescribed order. In academic learning often a more bottom-up approach is applied, where learning starts with remembering facts and concepts. In the non-formal youth work setting, learning can start at basically any level. We can, for example, start to create and then evaluate in order to better understand how all the elements of creation relate to each other.

This Taxonomy can also be applied to the Nature Intelligence domain of cognition. For example, most people gather some knowledge about nature during their young childhood and later school life. The things we learn in these settings are mostly applies to knowledge relating to the lower order skills of the Taxonomy, such as remembering facts and understanding them. However, this knowledge is essential to go further up in the Taxonomy of Bloom and to apply, analyse and evaluate. The NQ model shows that literacy and outdoor skills are important cognitive competencies for a person's nature intelligence.

Interpreting and connecting the knowledge from the lower skills on the Taxonomy of Bloom, remembering facts and understanding them when you are in nature or even to act on that knowledge – is a higher cognition skill, but it is also

more intertwined with the concept of Nature Intelligence.

The higher cognitive skills in Bloom's Taxonomy, sometimes described as critical thinking, are also highly relevant to the concept of Nature Intelligence. Curiosity, as one of the NQ cognition competencies, is linked to the creativity, evaluation and analysis skills of Bloom's Taxonomy. Curiosity about what nature, what happens in nature and how everything related, are fundamental and essential ingredients for someone to analyse, evaluate or to create something new. These higher order cognition skills are intertwined with other domains from the NQ model. In creation, there is often more than just cognition: there is emotion, spirit (intuition) and all of this is expressed in the act of creation.



In other words, and using an example from the youth setting: imagine yourself as a young person. You learned at school that squirrels eat acorns. From your home you look at an oak tree and see a squirrels every day and you enjoy looking at them very much. Your neighbour who owns the three wants to cut it down because the falling leaves bother him every autumn as he needs to clean his driveway. You ask him not to do that because it is the only oak tree in the area, it is magnificent and you really enjoy looking at the squirrels. You've applied the knowledge of a squirrel eating acorns.

Not only is this applied cognitive knowledge, but the knowledge in combination with the emotion (liking the squirrels) and maybe even a spiritual aspect (a daily ritual of watching them every day and take a second to be in the moment) leads to an action (asking your neighbour not to cut down the tree).

Examples of developing the Cognition domain

The cognition dimension consists of multiple layers - keeping the Taxonomy of Bloom in mind. A lot of the cognition dimension is also what is focused on in more traditional environmental education. The lower order skills, such as recognizing plants and animals, understanding their function, understanding basic natural and biological processes, are essential to applying knowledge in practice.



For example: If you want to start a fire, it really helps if you know what materials you can use, and that you need fuel, oxygen and a high temperature. If your fire is not working, you can apply the knowledge you possess. And if your fire gets too big for your liking, then you also know what you can do to make it smaller. However, without the knowledge at the lower skills it is not impossible to reach the higher skills, you may manage to start a fire (apply) through experimenting but, in general, the lower skills (knowledge) do help.

A lot of nature-based activities are a base for developing cognition. Whether it is learning more about different species by catching bugs or making a herbarium, or applying knowledge or skills such as making a fire or collecting edible plants to make a meal for the first time in nature.

Cognition and motivation; the importance of learning step by step

To be able to learn well, circumstances must be right and goals should be within reach. If something is too hard, we will be demotivated because we feel like we are never able to manage. But if something is too easy, we could get bored fast. So, in order for people to learn in the most optimal way, they are properly challenged, but feel capable of doing something. Then there is a moment of feeling comfortable (not too long because you might get bored) before being challenged again. This is called the **zone of proximal development**. This can also help in making people apply the higher skills before they have the knowledge of the lower skills. You can do this by making some of the knowledge accessible when necessary.



For example: Your learning goal is for participants to have a general insight about the ecosystem of a coastal area. If we go bottom up in the model by Bloom, we would start by learning all the species that are living in the coastal area, then ex-

pand knowledge from there. However, you could challenge participants by giving them the assignment of improving the living situation of one key-stone species in the coastal area. By doing this, they need to do their own research and will both gather knowledge (lower skills) by themselves because they need them to apply them (higher skills) on their design. You skip the learning of all the species, but the participants will learn/look up the species to come to a good design.

Another example to address the lower levels in a motivating way could be a game. Games could have several goals such as getting to know the group, teambuilding, keep participants moving around, bring diversity in your programme and, of course, introducing knowledge: from a memory game about three names to guessing animal sounds. A way of addressing lower-level skills in a game could help the motivation of learning.

Cognition and age

Cognition is something we develop during our childhood and adolescence. When developing NQ, the highest forms of cognition might not be within reach for some age groups. This does not make them less Nature Intelligent.

The IQ is measured in a different way according to age, taking the cognitive development into account. The IQ stays relatively stable throughout our lives. However, as we get older, when our brains are fully developed, the reach of the IQ increases. Meaning you cannot compare the IQ of a three-year-old to that of an eight-year-old based on how they do math.



During childhood and adolescence our brains are still developing and some ways of thinking are simply not very available when younger. Formal thinking, reasoning and using arguments are aspects we learn during adolescence. Most of the higher forms of learning require metacognition – thinking about the way we think – self-knowledge and evaluation which are all skills we learn during puberty. When working on Nature Intelligence one should take the general cognitive development of the brain into account.

For example: for children aged 6-8, things that are quite far away in the future are hard to understand. Things like climate change are quite abstract, it will be more efficient if you take them to a place where they can see what is happening in their own surroundings. From age 10-12, they can not only grasp the concept but can also have a discussion about climate change.

Another example: Half way through adolescence, people will develop norms and values, so from mid-adolescence you can have a discussion about topics that have a more moral aspect for them, such as hunting or other aspects of using nature or natural resources.

Assignment versus internal motivation

In the theoretical framework of NQ (Van den Berg & Albers, 2022), we talk about three components of the cognition dimension: literacy, curiosity, and outdoor skill. Both literacy and outdoor skills are things we could develop within a youth programme, and we can apply external motivation such as an assignment, a challenge, peers doing something etc. Curiosity is a bit different because it is about internal motivation which is just that: internal motivation. When curiosity is felt, it often comes along with joy and a sense of 'flow'.

According to the Self-Determination Theory, there are three basic needs to develop internal motivation: relatedness, autonomy and competence (Ryan and Deci, 2001). We could do a lot by staying within the zone of proximal development, which fosters the feeling of competence. Autonomy can be given by allowing the participant choices.

For example: autonomy can be promoted by giving the option of two activities. Do you want to play a game in the woods or do you want to do a practical experiment by the water?

Relatedness can be promoted by spending time together and building a relation with participants or between them, being interested in who they are as a person and making them feel comfortable could help the internal motivation as well.

The need for competence relates to challenging learners in a healthy way, by getting them out of their comfort zone and into a 'growth zone'.

If one of these three basic needs is failing, the internal motivation will drop. For example: when a participant's opinion is not validated and recognised by a group, it doesn't make them feel connected and may even make them feel emotionally unsafe. The relational aspect is missing, and it will probably affect their motivation to participate. In a group of young people, internal motivation and interest could really make a difference in the development of NQ.

Reflection Questions

- Where in Bloom's Taxonomy do you feel most comfortable in your cognitive learning?
- How does this taxonomy apply to your youth work practice? Do you apply the full spectrum of cognitive skills in your programmes or are there some elements missing?
- Can you think of examples where your learning experience was bottom-up from the Taxonomy? How did you feel about this way of learning?
- Can you think of an experience in which your learning started at higher order skills (such as with creation)? How was that experience for you?
- When and how do you experience curiosity about nature? How does this make you feel when you are learning from curiosity?

Suggestions for further reading

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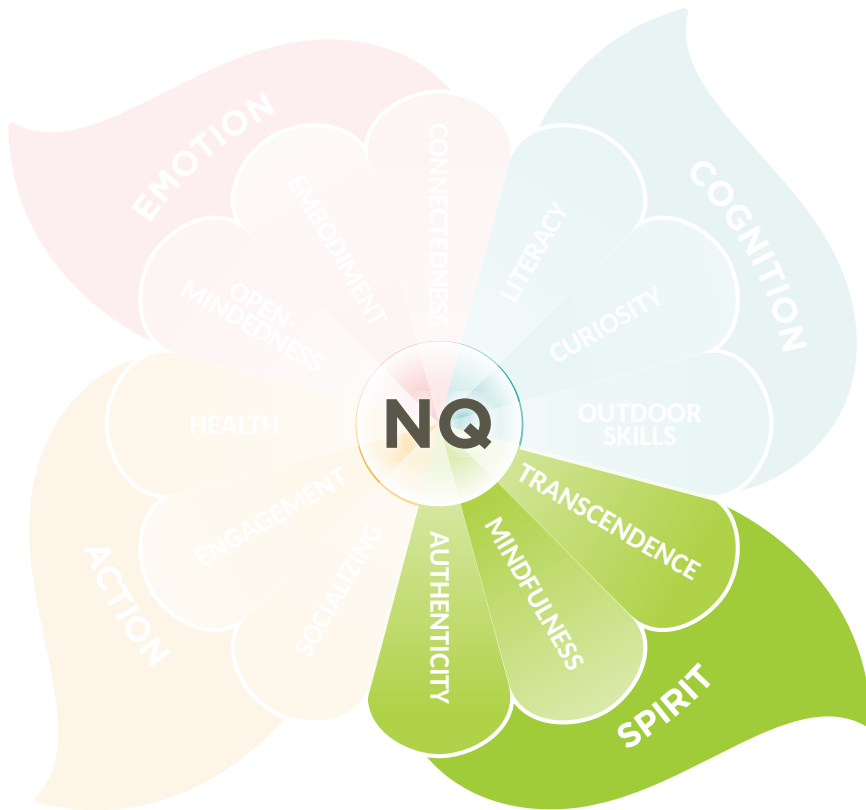
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Chapter 3: Spirit Dimension

Authors: **Jan Látal & Helena Kosková**

The Spirit dimension refers to a feeling of transcendence and interconnectedness, based on the realization that the natural world that surrounds us is alive and intelligent, just as humans are.



Key messages:

Despite the differences in the environment and climate there has always been communication between people and nature. In modern times we can see different types of communication with nature in religions, spiritual and ecological movements or in modern art and music.

Ceremonies and rituals all over the world have various forms and similar meaning - to reconnect to nature and the universe, to remember and understand the basic principles of life, mark important moments to bring them into awareness and to behave accordingly.

Non-formal education inspired by different cultural traditions, religions, art, music and environmental movements aspires to create fresh modern settings for connecting with nature, spirit and sense.

Introduction

To cover the complexity of Nature Intelligence (NQ) as a concept, we need to include the spiritual dimension as one of the four main pillars and essential. There are several reasons for the spiritual dimension to belong to the concept, namely historical, practical, psychological and social. In this chapter we will introduce some of the key ideas behind the spiritual aspect of Nature Intelligence and explore different ways of approaching this topic. At the end of the chapter, we also suggest ways to include the spiritual dimension in non-formal education and present examples based on previous programmes for better understanding.

The concept of Nature Intelligence (NQ) is rather new, and so is its spiritual dimension, but it partly overlaps with some existing theories and is connected to already established models. We will not

go deeply into the definition of nature as such nor describe spirituality.

For further reading about existing concepts and to become familiar with the wider frame, we invite you to look at the Theoretical Framework of the NQ concept (Van den Berg & Albers, 2022). For the purpose of this chapter, it will be enough to highlight that nature is understood in a broader sense (including urban areas, humans, the universe, e.g.). Spirituality can be seen as a human activity (inner or outer - mental or physical) focused on a transcendental theme, something bigger, higher, invisible and sacred.

Intelligence is a capacity and skill to deal with certain life areas or topics.

Spiritual domain of NQ in time and space

We focus here on the spiritual dimension of Nature Intelligence, which is only one of four aspects. It both overlap with and is different from Spiritual Intelligence (Gardner, 1983). The term Spiritual Intelligence is proposed by Gardner, although the understanding of it is not very coherent and the concept is not fully established.

If we look at nature and spirituality as the two main themes of interest, some connections come immediately to mind. The first impressions of this combination, and its qualities, are usually combined with some emotions because of the character of both. The images that may appear, and the type of emotions connected to them are strongly influenced by the cultural, personal and professional background of the person dealing with these themes simply because both of them are very abstract, personal and connected with other ideas, preconceptions and even biases. To explore this potentially controversial area we will present various examples and show some of the possible approaches.

Spiritual domain in prehistory and general history

If we look at history and think about spirituality and nature, they seem to be interconnected and, in some cases, even inseparable. While our an-

cestors' understanding of nature as a phenomenon is very different and often unknown, there is clear evidence of communication with the environment and with some elements in particular.

Archaeological findings show a rich variety of images of the Sun, the Moon and the stars, animals, trees, etc. through different cultures and eras. It is clear from ancient fragments that people related to nature and understood their total dependence upon it. To know nature's qualities, patterns, specifics and details was a matter of survival. Despite differences in the environment and climate, there was and still is communication between people and nature. We know about it from history thanks to pieces of prehistoric art or from analysing burial grounds. In recent history and in modern times we can see different types of communication with nature through religious, spiritual and ecological movements as well as through modern art and music.

Communication with nature usually leads to personification. There are many images of the Sun, Thunder, the four elements and all the other main natural aspects converted into more or less anthropomorphic figures. In the Gaia theory e. g., nature is seen as a self-regulating super organism. Pagan religions have their polytheistic pantheons filled with gods associated with thunder, trees, animals, water, fire, etc. Personification does not necessarily mean simplification, though it may seem that way at first glance.

The other perspective may be that **seeing a natural phenomenon as a being** gives it intelligence, depth and a higher level of importance. It is of course easier to communicate with something that looks like a person, but this doesn't necessarily eliminate the meaning, seriousness and deeper understanding. On the contrary, it may invoke greater respect and bring a sense of humility and grace to the relationship.

In short: **understanding nature and getting in touch with it on a closer and private level can lead to a being-with-being type of relationship and dialogue, which can vary or progress from a me-to-you to a me-to-me or a we-to-we.**

Prehistoric humans were fully dependent upon nature, developed ways to connect to and learn

from it, and found ways of strengthening the connection and expressing it through ritualistic behaviours, traditions, habits and art. Different types of intelligences were necessary in order to survive, and the spiritual dimension was an important aspect with very practical consequences. Communication with nature leads to knowing more about it, understanding it, respecting it, which directly results in a better chance of survival. It's not this simplistic or romantic of course: we have to consider the totally different mindset and living conditions of ancient peoples, but it's enough to define the background and show how important the spiritual dimension is.

Spiritual domain at Social level

Another very important area where the spiritual dimension plays an important role is the social environment of traditional communities. Tribes, villages, regions, language groups all have their ways of implementing natural wisdom in daily life, imitating what is happening in nature and the universe in their symbolic language through ceremonies, traditions and rituals. Some are very sophisticated, some very simple - their forms are very different, but the meaning is very similar: to reconnect to nature and the universe, to remember and understand the basic principles of life, to mark important moments, to bring them into awareness and to behave accordingly. Not everything in traditions and ceremonies has a spiritual dimension, but their roots are in a non-materialistic perception of nature and the universe.

Spiritual domain on individual level

The life of an individual is framed and filled with moments which require attention simply because of physical changes (birth, adolescence, death) or because they have some cultural or social importance (marriage, adulthood, initiations). Nature traditionally plays a crucial role in the ceremonies that mark these moments. It can be the environment (vision quest spot, retreat place), the companion (totemic animal, sacred tree) or even a supporter (psychedelic substances, symbolic food or drinks). The spiritual dimension is included as well, mostly in the form of ancestors, gods, spirits



or other aspects. Using the combination of nature and spirit wisely and effectively makes it easier for an individual to pass through important life stages and helps others to acknowledge them.

There is little difference between today's humans and our hunter-gatherer ancestors. We still fully depend upon nature and we still go through social and individual changes, following the same cycles and patterns. The development of Nature intelligence together with this spiritual dimension and to follow in on the old traditions but in a modern, meaningful and useful way, may be one of the solutions for a healthier lifestyle and a more sustainable society, as it responds to deep human needs.

Examples on how the spiritual domain and nature are connected

In order to understand some existing approaches better and see how the spiritual dimension and nature are connected, we will look at religion and art as two interesting examples. They use different forms of expression, target different audiences, but overlap in some cases and sometimes even complement each other.

Religions and nature

To start with, let's look at **Christianity**. The most important dates of the liturgical calendar are related to astronomical events: Christmas on Solstice, Easter on the full moon after Equinox. Nature is God's creation, greatly reflected in the tradition of Saint Francis for example. The second encyclical of Pope Francis (Bergoglio, 2015) covers many environmental themes.

Another great example is **Buddhism** which is deeply connected to nature and the environment on many levels. According to this tradition, the birth, enlightenment and death of the historical Buddha Shakyamuni took place and is celebrated during the full-moon of the month of May (this day is called Vesak). There is a tradition of forest monks in Thailand. Zen master Thich Nhat Hanh spoke about the need for a spiritual revolution to deal with environmental challenges and the Dalai Lama tweets: "Protecting our environment is not a luxury we can choose to enjoy, but a simple matter of survival."

Fasting, in **Yoga traditions**, is usually recommended for full-moon days. There is the Sun Salutation in Yoga as one of the most common practices. Ramadan is the ninth month of the Islamic lunar calendar and is also connected with fasting.



The fundamental principle of Jainism is ahimsa (non-violence), meaning that one must not kill or harm any other being. The teachings of Taoism are based on the principle of Tao which flows through everything in the universe. Taoism seeks the harmony between humans and nature.

Many direct and strong connections to nature and environment can be found in the **native spiritual traditions**. Some details of the Native American Medicine wheel vary across different tribes, but it always contains four directions, elements, seasons, life stages and animals. The tradition of **Australian Aborigines** is based on the belief that everything is alive and energised by a spirit. **Shamanic traditions** get in touch with natural forces and beings through different channels and see them as guides or healers.

A very interesting example of implementing nature based spiritual principles to different life areas and practices is **Anthroposophy**. This teaching focuses on cultivation of human being in harmony with the universe. Anthroposophy encourages intuitive thinking and creativity which, when applied to everyday activities, results in unique outcomes. The anthroposophical system of agriculture (biodynamic agriculture) is based on respecting and following life forces and is nowadays well known and widely spread. There are hundreds of Waldorf schools founded on educational freedom, natural rhythms and a strong social dimension.

In terms of recent spiritual movements and initiatives, we can mention the **New Age** with all its variations, where nature and the universe are the

main sources of inspiration. There are many overlaps between the New Age movement and environmental activism. Some of the ideas are similar and many of the key persons are active in both.

As a last example, we would like to mention the diverse movements covered under the term **Neopaganism**. Returning to the “traditions of our ancestors” and practising something which may or may not be inspired by real old ceremonies became a significant trend. Modern Celts, Slavs and different types of Shamans usually practice their ceremonies outdoors and celebrate nature. The forms of neopagan practices vary a great deal, and often have a certain romantic flavour, but show a clear underlying tendency of returning to our roots, connecting with nature and to re-establishing its spiritual dimension.

Nature in traditional and modern art

Art and nature have always been connected, in different ways, for different reasons and purposes. A good piece of art certainly requires a special type of intelligence. We can see art as an activity which uses intuition, creativity and precision techniques, and may therefore be a source of inspiration, particularly when it connects nature and spirituality.

Some types of art are even close to individual or community rituals, supplementing the missing aspect of transcendental practice in modern society. Some random examples that show the **wide scale of spiritual dimension and nature in art** are cave paintings; solar symbols in the Bronze age; sacred geometry in medieval architecture; John Coltrane’s improvisations; David Rothenberg’s musical interactions with animals, The Orgies Mysteries play by Hermann Nitsch, Jacob Kierkegaard’s Chernobyl sound monuments or Richard Long’s minimalistic work.

Art was and is often directly connected to spirituality as a supporting instrument (compositions for masses, Tibetan thangkas) and is also a way of practicing and expressing spirituality (Japanese calligraphy, Sufi dervishes’ dancing). Some art approaches and techniques can certainly be very useful sources of inspiration for applying

the spiritual dimension of Nature Intelligence in youth work and non-formal education.

Spiritual domain of NQ in Youth Work

Human needs for connection, belonging and feeling sense have been present across time and space and we touched different ways of satisfying them above. While we historically referred to survival at a practical, physical level, in contemporary European society this has shifted into a more symbolic and psychological aspect for individuals – the survival of integrity. Here, also, a connection with nature - including self and other humans - and a synchronisation with natural cycles and laws can be the key.

But how can we experience them today, when the old ways are often lost or unapproachable for young people? Which forms can touch these universal needs while being accessible, understandable and authentic in today's context? What is the place of spirituality and nature-connectedness in today's lifestyle and values? Who can offer guidance to young people on this journey? And when we look beyond individual lives - how can we live in a way that allows the sustainability of the human kind and all life?



These are bubbling questions for young people, sometimes expressed in peaceful ways through dialogue and exploration, sometimes hidden under risk behaviours or depression, anxiety and a lack of inner motivation. Youthwork and non-formal education activities potentially offer a safe container for healthy exploration and action in this field, and in recent years we see many examples of good practice. Inspirations from different cultural traditions, religions, art, music and environmental movements combined with non-formal education approach aspire to create fresh modern settings for connecting with nature, spirit, sense.

Examples of spiritual practices used in Youth Work

Several examples of practices, used traditionally and in recent youthwork context, strengthen the spiritual dimension of nature intelligence - of course overlapping with all other dimensions.

Pilgrimage

Jews walking to Jerusalem, Buddhists around mountain Kailash, Muslims to Mecca, Christians to Lourdes, Hinduists to Rishikesh, all with a similar intention - expressing faith and hope, worshipping God(s) or saints, forgiveness, thanksgiving, purification, healing. Walking through the outer landscape creates a mirror that reflect images of the inner landscape.

Artist Richard Long carrying water to the source. Activist Satish Kumar walking 8000 miles to visit all capitals of nuclear-armed countries and call for peace. Public water pilgrimage to connect with waters, learn about it, from it, for it. A group of young people in institutional care walking to Santiago de Compostela as their rite of passage into adulthood. Labyrinth walks to celebrate the Winter Solstice. A reflection walk at the end of a training course to integrate and celebrate our new insights and understand how to share them with the world - climbing the hill to have an overview, to see further horizons.

Solo time in nature

A Native American person going through a Vision Quest - 4 days of fasting in a natural place in a remote area - to better understand their oneness with all things and gain knowledge from the Great Spirit. Christian and Tibetan monks spend time in the desert or in caves to contemplate, meditate, reach enlightenment. A solo night in a forest during the Hero's Journey training course for young people - to allow them to find their own gifts, learn to use them and manifest them into actions. A sitting spot, a personal natural place which you visit every day during a youth exchange, simply to be there, to listen, to meditate. A threshold walk in nature to find an answer for an actual personal question.

Council

People of many cultures gather naturally in a circle, often around the fire, to look for collective wisdom by connecting with themselves, nature, spirits. The Council of all Beings from Joanna Macy's Work that Reconnects, where we listen to voices, other than human, and elements. A Poetry Council with a group of youngsters - associating our lived experiences to a poem about nature. A daily evening circle during youth ex-

changes, to share our insights of the day, moments of self-connection, community bonding and connecting with nature and what is beyond us. A Council with nature - learning to communicate with nature, to listen to its messages and share them with others.

Rituals and ceremonies

Rites of passage in different cultures are performed to support stepping into adulthood and taking on a different role in the community. It usually contains an element of meeting death and being symbolically reborn as a new person, through spending days in wilderness and coming back with a caught animal, or swimming to an island far in the sea and back, or wearing gloves full of poisonous ants. A monthly new moon ceremony for young girls, to connect with their lunar cycle and refresh with the new energy of the growing moon.

In the current context, it can be a group expedition with rituals to become man from boy, to touch on personal talents, find potential and vision, grasp strengths, embrace freedom and responsibility. An autumnal equinox celebration with thanksgiving for the gifts of the season - inner and outer ones. A leaving ritual for members of a children's therapeutic group upon reaching 14 years of age - to close the time spent in the group, to open to new possibilities, to celebrate and grieve with the whole community, for whom it is also a change. And there are plenty more examples, sometimes hidden under a thick blanket of folklore or habits, often difficult to recognize, but still playing their role to some extent.

Conclusion

There is a strong inner human need for the spiritual element to be visible, present and integrated in life. Sometimes this need is hidden, or suppressed by prejudices, conventions, biases. This need is the voice of nature and nature's intelligence, inherent and at the core of our being, wanting to be heard. It calls for action, offers access to deep wisdom, great strength and ultimate healing. Answering the call, inviting this supreme guidance into our lives and practices, is one of the



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ways to healthier individuals and a more sustainable society.

Youthwork and non-formal education can create a very well-fitting environment to help spread these approaches and practices. It is a challenging task, as we tread on a thin ice, but inviting natural spirituality and nature intelligence into our activities has a lot of potential. Through the sensitive design of modern rituals, ceremonies and reconnecting activities, we can support young people's grounded understanding of the natural world, society and themselves.

Reflection questions

- What is Spirituality for you? How is it present in your life?
- What practices, rituals and ceremonies exist in your community, context, environment?
- What can you relate to, connect to, build upon, when preparing activities with a spiritual aspect?

Suggestions for further reading

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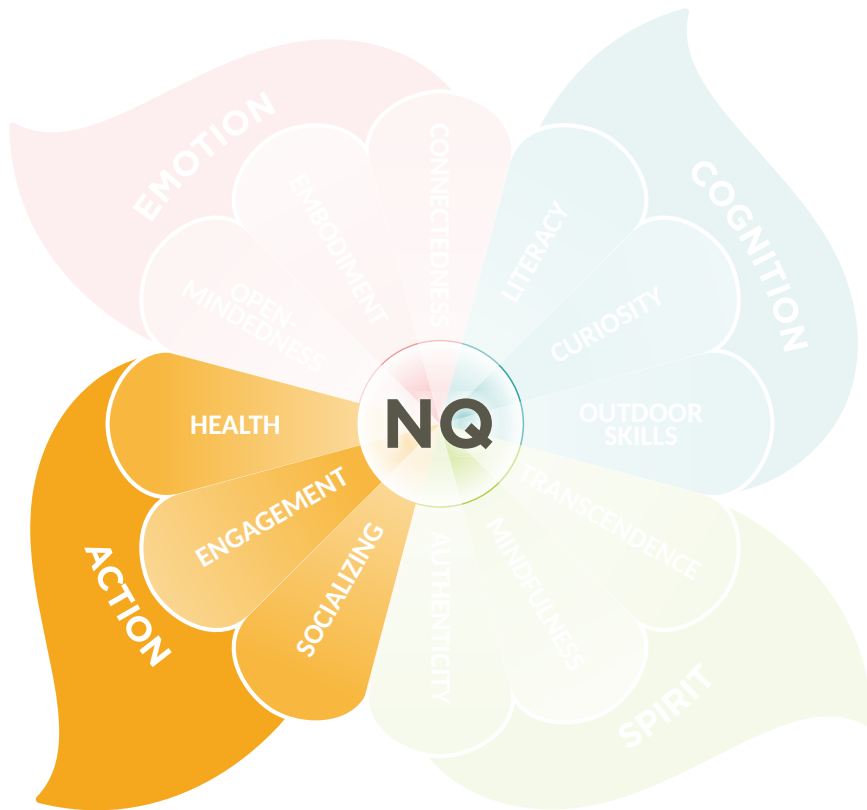
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Chapter 4: Action Domain

Authors: **Karmen Murn & Nils Leichsenring**

The Action domain refers to the ability to use emotional, cognitive, and spiritual competencies for regulating one's own health and the planet's health, as well as for socializing with peers.



Key messages:

NQ-related action is a consequence of the dimensions cognition, emotion, and spirituality.

There is no need for youth work organizations to drastically change their programs to foster NQ in young people.

There are already many existing possibilities for nurturing the NQ of young people in society. Connect young people to them!

Introduction

According to the theoretical framework (Van den Berg & Albers, 2022), the action dimension of NQ refers to the ability to use competencies of the other three dimensions (cognition, emotion, spirituality/existentialism) for the benefit of oneself and the planet.

Based on this definition, the action domain can be explained in two ways:

- On the one side, there is the question about the benefits of NQ-related actions. These benefits are described in terms of subdimensions (or competencies) inside the action dimension.
- On the other, there is the question about cause and effect of NQ.

In this background article we will:

- give a theoretical explanation
- show the use of NQ in youth work and give few examples
- present a few NQ-related actions in history

The Subdimensions of the Action domain

The benefit of NQ-related actions shows up in the subdimensions of the action dimension. The theoretical

framework defines action related benefits (and within subdimensions) as:

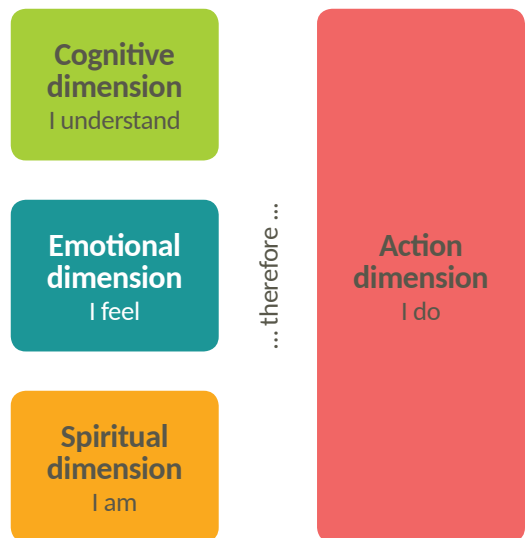
- Health - Using nature to self-regulate one's health and well-being.
- Engagement - Taking action to make the planet greener and more sustainable.
- Socialization - Enjoying spending time with friends in nature and use a shared interest in nature to strengthen connections with peers.

In other words: when the NQ of a young person comes into action, there will be benefits for them and/or their surroundings.

Cause and effect

In the meaning of 'cause and effect', all actions need to be nurtured by a base of competencies. In the frame of NQ, the base is given through achieved competencies in the cognition, emotion and spirituality dimensions.

The following diagram illustrates this:



The stronger this base is, the stronger the subsequent action will be.

The following contexts exemplify a more detailed overview about actions based on cognition, emotion and spirituality.

Actions based on cognition:

- If I understand the principles of nature, I am able to apply them in my daily life and even transform these principles into technology.
- If I understand which behaviour destroys nature, I am able to avoid or replace this behaviour.

Actions based on emotion:

- If I feel connected to nature, I am (more) willing to protect nature.
- If I feel being in nature positively contributes to my inner balance, I can use (being in) nature to boost my (mental) wellbeing.
- If I feel an added benefit when in conversation with others in nature, I can use (being in) nature to nurture my communication.

Actions based on spirituality:

- If I am part of something bigger, it will be easier for me to reflect on questions like the meaning of my existence.
- If I am aware that all my actions are having an effect (on nature), I can use this awareness to direct my actions towards more altruistic behaviour.

In reality, the impact of NQ is not usually connected to its cognition, emotion and spirituality dimensions in such a one-dimensional linear way. These dimensions are fluid, interconnected and for sure not complete. We cannot say that a certain action emerges strictly from one dimension, because any action is driven by a set of NQ-based causes. We cannot even say that a certain set of NQ-based causes always lead to the same action, because the subsequent action is dependent on causes beyond NQ, such as other (multiple) intelligences (e.g. spatial intelligence), the current situation, the point in time or the individual itself.

Here are some examples that may help clarify what we mean:

Imagine a man hiding from a thunderstorm in his car.

Is he hiding in the car because he understands it is safer there (cognitive dimension)? Or because he is afraid of the thunderstorm (emotional dimension)? Does he get a glimpse of faith through the thunderstorm and realizes how fragile he is?

The answer will most likely be “all of the above and more”.

Would his decision of hiding in the car be the same if he is on the top of a hill or in a valley? Would his decision be the same if he exhibited a low or high spatial intelligence? Would his decision be different if this man was 18 or 80 years old?

Endless questions ... endless causes. And all these causes are fluid and interconnected. Nonetheless, his decision to hide in the car seems to be an intelligent decision in terms of NQ.

Examples of activities for using NQ in Youth Work

In the previous part of this chapter, we looked at benefits and cause and effect of NQ-related actions. But how does all this relate to youth work?

As a youth worker, it is not your job to design young people's life paths. Your job is to help young people find their own paths, provide opportunities for insights and help them build a solid inner base. But let them use this base and reap the results on their own. Keep this in mind while introducing NQ into your youth work activities.

If you teach young people basic cognitive capabilities about (and in) nature, you will awaken some interest in them. If you show young people how to use nature to deal with or to channel emotions, you will contribute to their wellbeing and you will help them express their needs. And if you create a safe space for young people to dream for a few moments, hours, or days, you empower them to think outside the box and maybe even to inspire others.

Including NQ into your daily youth work and to bring young people's NQ-related competencies

into action does not require a drastic change of your programme. You do not have to organize long events such as nature camps or training courses, even though these could help, too. Usually, you can use your program as it is and just add some elements, including all four NQ dimensions, in order to nurture NQ.

You do not need to be or become an expert in nature education to nurture the NQ of young people. Just connect them to nature and support them in finding opportunities to connect. Don't expect/demand too much and be aware that NQ is in every one of us.

If you look around, you will realize that there are already lots of activities nurturing NQ in young people in your setting. However, they often address only some of the four NQ dimensions and not all. Here are a few examples:

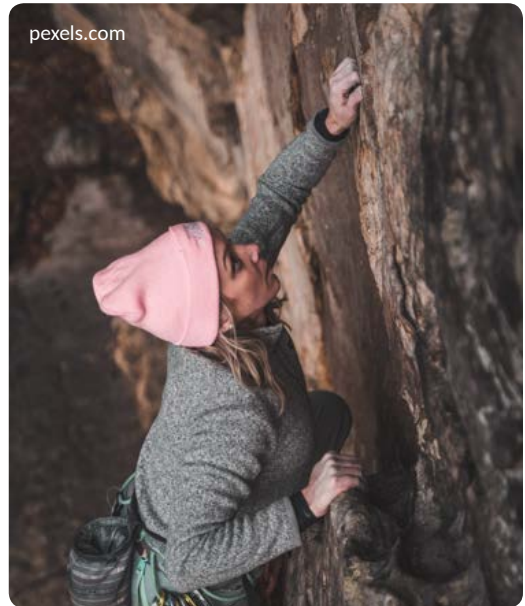
Scouts

Scouting is a worldwide youth movement, which uses non-formal education methodologies and practical outdoor activities. In principle, it is a voluntary non-political education movement for young people. Scout principles may differ in some countries, but here are few that demonstrate their purpose and how well they fit into our model.

- Cognitive dimension: activities should be useful, survival skills
- Emotional: loyalty, trust, friends with animals, self-confidence building, honour
- Spiritual: inclusive, duties and spiritual rituals
- Action: learning by doing, team system, helping others, contact with a nature environment

Climbers / Boulders

Nowadays, climbing is becoming more popular as a sports and has even become a discipline in the Olympic Games. Young people in particular see climbing as being trendy and indoor and outdoor boulder walls and boulder clubs are being established all over Europe. That said, climbing originated in nature, and as a consequence



of an outperforming boulder market, more and more people are taking the opportunity of practicing their skills in a natural environment.

Just for fun, let's think about the climbers of some of the Himalayan mountains. Such climbers will need to understand and learn how to survive in an extremely hostile environment (cognitive dimension). They will also need to train to be able to do the climb (action dimension). Their emotions will be over the roof, mixing fear, excitement, anxiety etc before, during and after such a climb (emotional dimension). Once they reach the top of the World, the experience is beyond anything they have ever known and cannot be described (spiritual dimension). However, for the sake of safer youth work experience, we encourage you to start by trying to hike the nearest hill.

Outdoor Sports

There are several examples of traditional outdoor sports that nurture NQ in a playful way and are perfectly suitable for the needs of young people. Surfing, sailing, golf, skiing, athletics, swimming, diving or cycling, just to mention a few examples.

In the 1980s and 1990s, there was a huge wave of transforming indoor sports into variants, enabling



people to do their hobby outdoors. Many traditional indoor sports saw an outdoor variant developed, mainly by young adults, become trendy among young people and, step by step, successfully integrating worldwide sports. Well known examples are streetball, as a variant of basketball, or beach volleyball as a variant of volleyball.

Regardless of being traditional or trendy versions, outdoors sports all have one thing in common: participants perform in a natural environment. Wind, temperature, light conditions, terrain are influencing all these sporting activities. In other words: young people find perfect conditions to nurture their NQ. They will develop naturalistic skills, boost their health and wellbeing, connect to peers, (learn to) take on responsibility for others and society, and get a touch of spirituality when transcending inner and outer boundaries.

Humanitarian services

There are plenty of possibilities for young people to participate in activities and programmes in the field of environment protection. Community services, voluntary services (such as the European Solidarity Corps) or ecological years are present in nearly all European countries, yet many young people are unaware of what is available. It is easy to imagine that spending a longer time with peers in the field of environmental protection will have a formative influence on them.

Examples of actions in the cognition, emotion and spirituality domains

It is important to understand that, by definition, NQ dimensions are neither good nor bad, just like IQ or EQ dimensions are not value driven. The value of NQ appears the moment when NQ competencies lead to some actions, and the impact these actions have can be good or bad.

There are several examples of using NQ to start some action. Here are a few we've selected, where the use of NQ is predominated by (at least) one of the dimensions:

Bionics, cognitive domain

Bionics is a design discipline in science to transfer phenomena in nature into technology. Consequently, the wording bionics is a mixture of biology and technology. Well known examples: sonar (based on dolphins or bats), propeller (based on maple tree), lotus effect (based on lotus flower). It is obvious that developments in bionics are predominated by the cognitive dimension of NQ. However, we cannot ignore the wonder we feel about nature's ability to adapt to different situations. This clearly indicates some sort of emotional dimension. Without a deep understanding of nature processes a transfer from biology to technology seems impossible.

Fridays for Future, emotional domain

Fridays for Future is a global movement (of young people) to develop fast measures to stop climate change and to put them action. In August 2018, the 15 years old Swedish Greta Thunberg started boycotting school on Fridays to raise awareness about the threat of climate change. More and more young people started following her example and 6 months later the movement resulted in organized school strikes worldwide. Most likely Greta felt a lot of anger, given insufficient political measures, which turned into fear for her own existence. Other people followed. Anger and fear are clearly emotions, which connect straight to the emotional dimension. Yet her performance

and actions are based on facts, which show a connection to the cognitive dimension as well.

This movement had a direct impact, from action to policy level. Without this movement it would have taken years for policy makers to bring urgent climate issues to their agenda. Watch this **VIDEO** from the Council of Europe Youth Partnership to get a nice chronological overview of the movement.

Elon Musk, spiritual domain

'Our existence cannot just be about solving one miserable problem after another. There need to be reasons to live.' Elon Musk, 2017.

Looking at Elon Musk through one-dimensional economic spectacles, it seems hard to understand, but for many young people, Elon Musk is some sort of inspirational leader. His visions, such as settlements on Mars, the electronic payment system PayPal or SolarCity seemed impossible 30 years ago. Minds like his are guided by some sort of spiritual inspiration.

For the development of his spiritual visions, he is using nature science, which is mostly cognitive dimension. And to properly promote the vision, he is using emotions to convince people, and that is mostly the emotional dimension. His actions follow. From this perspective Elon Musk represents

a holistic example for the use of NQ, yet his actions are predominated by his visions, by his spirituality.

Approximately 100 African elephants are killed every day, primarily for ivory.

The aim of the NQ concept is to make a positive impact on the wellbeing of young people and the environment. A stronger connection to nature doesn't always and automatically lead to a better world. For example, for a better understanding about possible bad use and impact of NQ, here are short but obvious examples for each of the three dimensions:

- Almost all weapons are based on natural principles of **cognitive** disciplines like physics, biology or chemistry!
- Greed is a good example of how much damage the **emotional** dimension can make. For instance, approximately 100 African elephants are killed every day, primarily for ivory.
- In the history of humankind, many actions driven by the **spiritual** dimension were (and are) used to block developments in terms of nature sciences, medical care, personal growth, diversity or women rights. As a very obvious consequence of such actions, almost all developments in terms of society and technology stood still for more than 1000 years during the middle ages.



Conclusion

There is a high probability that a single youth work activity will not generate actions like inventing a pioneering technology, establishing a world-wide movement, or scooping the next Elon Musk. But it can encourage to do so!

As a youth worker, if you want to bring young people's NQ into action, connect them to nature. Include nature elements and materials in your daily programme. Move conversations and meetings into nature, be it a garden, a park or whatever is close by. Show them possibilities in their surroundings and build up cooperation with existing offers which nurture NQ. Be a good example for your young people - act ecologically responsible and explain your actions (e.g., why go to a youth exchange by train) to your young people.

Just give them a solid base in terms of NQ and their action will follow one day. Maybe you will never see the actions of your young people, but the more youth workers sow NQ, the more subsequent actions will become visible in your own surroundings.

Reflection questions

- How do you see the relation between the action component of NQ and its other three dimensions: cognition, emotion and spirit?
- If you think of a NQ-action example, which of the domains do you recognise at its base (or motivation)?
- What kind of behaviours do you show that use nature to promote your well-being?
- Do you express pro-environmental behaviour in your daily life? Which motivations are at its base? Do you recognise the cognitive, emotional and spirit dimensions in it?

Suggestions for further reading

- Braungart, M., & McDonough, W. (2009). *Cradle to cradle*. Random House.
- De Waal, F. (2016). *Are we smart enough to know how smart animals are?.* WW Norton & Company.
- McCallum, W. (2018). *How to Give Up Plastic: A Conscious Guide to Changing the World, One Plastic Bottle at a Time*. Penguin UK.

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- Van den Berg, A.E. & Albers T. (2022). *Nature Intelligence in Youth Work: Conceptual model, measurement scale and critical success factors*. Aalten: Anatta Foundation.

Appendix A: Flower model of Nature Intelligence, an overview



Cognition	Emotion	Spirit	Action
This dimension taps into the 'classic' competencies that are the focus of environmental education: environmental knowledge, attitudes and behaviours. NQ emphasizes the intuitive and experiential side of these competencies	This dimension evolves around the feeling of connectedness to nature. It reflects a sense of kinship and an affective individual experience of connection with nature, both psychologically and physically, through direct embodied experience and an open-minded approach towards both the positive and the negative aspects of nature.	This dimension refers to a feeling of transcendence and interconnectedness, based on the realization that the natural world that surrounds us is alive and intelligent, just as humans are.	This dimension refers to the ability to use emotional, cognitive and spiritual competencies for regulating one's own health and the planet's health, as well as for socializing with peers. This dimension is somewhat an 'automatic' result when the cognition, emotion and spiritual dimensions of NQ are realized.
Literacy	Connectedness	Transcendence	Health
Knowledge and an intuitive understanding of the dimensions, elements, patterns, and processes of nature	The ability to connect to nature, to care for other living beings, to live in harmony and balance with nature, and to identify oneself as part of nature	A 'flow experience' (also known as 'magical moments' or 'peak experiences') during which one feels lifted and connected to something bigger	Recognising and using the relaxing and empowering capacities of nature for self-regulation and mental health
Curiosity	Embodiment	Mindfulness	Engagement
An interest in nature and awareness of the intrinsic value of nature	A direct connection with nature through physical contact, which also implies resiliency against more adverse conditions in nature such as bad weather or dirt	Having a mindful sensory experience of nature	Being motivated and capable to engage in actions that make the planet greener and more sustainable
Outdoor skills	Open-mindedness	Authenticity	Socialization
Having practical knowledge and basic skills for staying outdoors and being in nature	Having an open mind, enjoying all aspects of nature, even the things that might be scary or disgusting	The capacity to be true to oneself, to be an authentic person guided by one's own inner principles, as a precondition for, and outcome of, spiritual experiences with nature	Choosing nature as a place to spend time with friends and family and using a shared interest for nature to strengthen connections with peers

About the authors

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A graduate in Psychology, has been working with Kamaleonte since 2013 as a facilitator of learning processes. He is firmly convinced about the power of nature in promoting well-being. Increasing NQ means helping the sustainable growth of the world.

Helena Kosková (Natural Spirit, Czechia)

Trainer, therapist, nature guide and facilitator of rituals and community/group processes. Gardening apprentice. You can often find her walking, exploring diverse forms of pilgrimage or sitting with others in circle, listening to stories and collective wisdom.

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Trainer, facilitator, ritual designer, and nature guide from South Bohemia. Interested in religions, cultures, archaeology, astronomy, and experimental music. His specialty is connecting nature, art, and spirituality in learning.

Karmen Murn (Ambitia Institute, Slovenia)

Longtime youth educator and trainer. Karmen has dedicated her professional work to understanding the learning process, researching, and developing new learning methods and spends her free time taking long hikes in nature, gardening and reading books.

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Experiential learning trainer and facilitator with a special focus on reflective practices, Angelica has a passion for nature in all its facets. At Kamaleonte, she oversees the International projects and networking. Over the years, Angelica has been exploring the topics of inclusive leadership, multiple intelligences, and emotional intelligence.

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Trainer and educator with a background in education of nature and sustainability. Kim designs educational programs and materials and works together with volunteers to reach more people to be inspired by nature.

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A graduate in Philosophy regarding Wittgenstein's studies. She works for Kamaleonte as a facilitator of learning processes in groups and as a researcher for Erasmus+ projects. She firmly believes in the value of nature as a fundamental tool for the education and well-being of individuals.

Other publications on Nature intelligence in Youth Work

This current publication belongs to a series of products on the promotion of natural intelligence in the youth sector. You can find all publications and products on www.natureintelligence.eu

Theoretical foundations:

Theoretical foundation

In the publication 'Nature intelligence in Youth Work, Conceptual model, measurement scale and critical success factors', the concept of Nature Intelligence is explored, and a conceptual model is presented based on the theoretical insights from the literature in this area.

Practice brief

A short and comprehensive introduction to the concept of Nature Intelligence and its promotion in the youth sector. This publication is written for youth workers and offers a brief and easy to read 'getting to know each other'.

Nature Intelligence in its wider context (current publication)

The publication you are currently reading provides explorations from and for the youth field on the applied possibilities and practices of the NQ concept. Written by experienced youth workers for youth workers.

Test your NQ (NQ-36)

A new questionnaire, especially designed for young people aged 16 to 30, that will help you make your own nature intelligence profile. By using this spiderweb shaped profile, you can identify which NQ domains and competencies you have developed the most and where there is potential for growth.

Practical applications for the youth work sector:

Design manual for Youth Workers

This manual describes design principles and guidelines for youth workers to develop or improve NQ youth programmes. You can read about content and inspiration on how connecting with nature can stimulate young people to take care of nature. How nature as a teacher can enrich the quality and impact of non-formal education programmes. Title: Nature as a teacher in youth work. Manual for promoting Nature Intelligence in non-formal education programmes to connect young people with nature.

Online training course

A self-directed online training course. This course provides an easy to follow introduction and can be done any place at any time. It provides a first understanding and insights on how NQ can be developed at both personal and professional levels.

Residential Youth Worker Training Curriculum

A curriculum for trainers that aim to prepare youth workers to implement the promotion of NQ with their youngsters in their youth work practices. It is prepared as a 5-day residential training course, and was piloted in the Netherlands in April 2022.



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