Early Language Development In Nature

Theoretical Handbook

ELa DiNa

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"Speak the things you see.
Let new words take and root and thrive and grow."

Lost Words Blessing – Spell Songs

Zavod
Republike
Slovenije
za šolstvo

MARBURG
UNIVERSITÄTSSTADT

JÖNKÖPING UNIVERSITY

Content

Introduction

'What is that?' 'Why is that?' Children raise such questions all the time when we wander with them outside in nature. They are constantly curious, but at the same time, they often do not know the right terms or have an explanation for many things around them.

'There, the moon! But it should be asleep!' exclaims five-year-old Alex in amazement at how the moon can be in the sky while there are powerful sunbeams shining through the foliage of the forest. He tries to find the best explanation for this surprising phenomenon with other children and the educator. Stories and even songs about the moon are exchanged.

Nature is full of fascination and, with that, also redolent with opportunities to learn and occasions to express, comment and question. The quote on the title page from the Lost Words Spell song urges children to 'speak the things they see' so that new words can take root in their vocabulary and their language and knowledge of the world can expand and grow. In the stimulating context of outdoor environments, stories and questions are 'naturally' raised, and explanations are sought. Children encounter natural phenomena and are encouraged to speak to express their wonder. The liveliness and variety of natural things and creatures, possibilities for movement, and special atmospheres make nature an extraordinary language space.

To unfold the language-stimulating potential of the natural environment was the main mission of our project *ElaDiNa – Early Language Development in Nature.* Specifically, the project brought together two topics of great importance to the context of early education: language development and children's activities in nature. The core idea of the project was to create a new general approach for early

language development in nature based on the experience and expertise of project partners. Learning in nature and with nature is one of the dimensions of connecting educational programmes to the real world, with existing evidence showing a direct correlation between this kind of connection and increases in the quality and efficacy of education.

What is ELaDiNa?

ELaDiNa (Early Language Development in Nature) is an Erasmus+ KA2 Strategic partnership project (2021–2023) addressing the possibilities of developing and promoting language skills in natural environments for children aged 3 to 7.

Language development is indisputably a crucial process concerning the general developmental process underpinning a successful educational career and fulfilling life. At preschool age, important steps of language acquisition set the course for a good start in school. However, it is also an acknowledged pressing issue for education (policy and practice) that some children struggle with early language learning and suffer from delays in language development, especially when they come from underprivileged backgrounds. The ELaDiNa project sought to unfold the potentially considerable language support of experiencing nature. The proven benefits of outdoor learning for children, such as enhancing their curiosity and autonomy, providing first-hand experiences as a base for cognitive, social, and physical development, and promoting children's well-being and health, can be enriched in connection with a specific focus on early language development.

In recent years, the potential of nature-educational experience to promote the linguistic development of children has begun to be recognised, but its potential has thus far been neglected in both research and practice. When children are given the opportunity and space in natural environments, their curiosity can be aroused and acted upon, their imagination stimulated, and their urge to move and discover themselves and their surroundings satisfied. These stimulating circumstances provide children with the chance to communicate intensively. The focus of the project was to examine these opportunities in order to refine and capitalise upon them to help children learn and improve their language skills.

Such an approach is novel and remarkably under-recognised, although outdoor approaches, in general, are well-known and widely acknowledged. Thus, **the main project activities were to:**
- develop, test, evaluate, and discuss the model 'Early Language Development in Nature' with international professional staff from academic and practical work fields,
- train an international group of in-service pedagogues and teachers,
- train trainers from different countries,

- initiate implementation of the approach in each partner region,
- prepare handbooks to support educators,
- disseminate the approach through further education for educators, pre-school teachers, and primary school teachers,
- share experiences at an international conference and different national events.

The results of all these project activities are presented in four different outputs:

- **Generic model** of the newly developed approach ELaDiNa, formed as a set of instruments, protocols, procedures, materials, and case studies on the implementation of outdoor learning for developing language (literacy, oracy) and other competences of children from age 3 to 7. The model provides innovative opportunities for children to develop and extend different competences in language and other foundational skills.

- **Theoretical handbook**, in which the focus is upon theoretical contexts of the 'Early Language Development in Nature' approach. The handbook provides findings of the project's process of intellectual exchange, theoretical work, and evaluation of the practical field trial. It also contains the generic model to show how it fits within the theoretical and evidential background.

- **Practical handbook**, in which methods, tools and guidelines of the 'Early Language Development in Nature' approach are gathered and explained through selected activity plans for outdoor use.

- **Training programme**, developed and implemented with 40 experts from partner countries, who gained new knowledge and skills on how to develop language in nature and how to transfer this knowledge to other experts.

Who is ELaDiNa?

Leading partner: Center šolskih in obšolskih dejavnosti – CŠOD (Slovenia), https://www.csod.si/

Project partners:
- Zavod Republike Slovenije za šolstvo (Slovenia), https://www.zrss.si/
- Jönköping University (Sweden), https://ju.se/en/
- bsj Marburg (Germany), www.bsj-marburg.de
- Universitätsstadt Marburg (Germany), www.marburg.de/portal/startseite.html

Associated partners – primary schools and preschool/daycare centres from partner countries:

- HallonEtt AB, Jönköping, Sweden (a preschool),
- Förskolan Pärlugglan, Jönköping, Sweden (a preschool),
- Råslättsskolan, Jönköping, Sweden (a primary school),
- Marburger Waldkindergarten, Marburg, Germany (a preschool),
- Grundschule Wohra, Wohra, Germany (a primary school),
- Regenbogenschule Ebsdorf-Leidenhofen, Ebsdorfergrund, Germany (a primary school),
- Bildungsstätte am Richtsberg, Marburg, Germany (after-school childcare),
- Kindertagesstätte 'Weißer Stein' Stadtallendorf, Stadtallendorf, Germany (a preschool),
- Städtische Kindertagesstätte Schröck, Marburg, Germany (a preschool),
- Anneliese Pohl Kindertagesstätte, Marburg, Germany (a preschool),
- Osnovna šola dr. Janeza Mencingerja Bohinjska Bistrica, Slovenia (a primary school),
- Osnovna šola Slivnica pri Celju, Slovenia (a primary school),
- Osnovna šola Litija, Slovenia (a primary school),
- Osnovna šola Miklavž na Dravskem polju, Slovenia (a primary school),
- Vrtec pri Osnovni šoli Voličina, Slovenia (a preschool),
- Vrtec Galjevica, Ljubljana, Slovenia (a preschool).

Theoretical Handbook – theoretical background and evaluation of ELaDiNa approach

This theoretical handbook draws together the theory and evidence underpinning the practical outputs of the project: the training programme and the practical handbook.

It comprises four main parts:

- The first provides a review of relevant literature on early language development and a rationale for why language development in nature may be beneficial for young children. It summarises existing literature that looks at early language development in nature.

- In Part 2, our integrated formative evaluation process and its results are reported and discussed. In the final part of this section, we bring together some key points from our examination of theory and research to support the value of early language development in nature, summarising the new learning that has been achieved through the ELaDiNa project.

- The third part sets out a generic model that has been developed from what is currently known about this field, (Part 1), what we learnt from the ElaDiNa Project and its evaluation (Part 2) and from previous experience of a pilot project conducted in Marburg, Germany that formed the initial seed from which our ElaDiNa project grew.

- In concluding this theoretical handbook in Part 4, we summarise the successes and challenges of the project, its main learning points and suggest some implications for policy, practice and further research.

Part 1

Theorising towards a model of ELaDiNa

The Early Language Development in Nature (ELaDiNa) project was intended to build upon existing knowledge about early language development and the role of teachers in supporting that, but also to provide a rationale for why utilising natural environments could help stimulate and support good pedagogical practice. We found there was very little currently published literature about how these two areas intersect.

In the following sections, we consider each of these aspects in turn before summarising what is known specifically about early language development in nature through a systematic review of that literature. These steps were undertaken to inform our theoretical understanding.

Language development of children – milestones

Katarina Dolgan and Nina Novak

Introduction

Language development of young children is a gradual process that occurs over several years. During this time, children learn to understand and produce language in a specific sequence of stages.

The first stage of language development is the prelinguistic stage, which occurs during the first year of life. During this stage, infants communicate through nonverbal means, such as crying, facial expressions and gestures. Around the age of one, children begin to produce their first words, which marks the onset of the second stage of language development, the one-word or holophrastic stage. At this stage, children use single words to convey their needs and wants, such as "mama," "dada," or "juice." As children approach their second birthday, they enter the two-word or telegraphic stage, where they start to combine words to form short phrases, such as "more juice" or "bye-bye mommy." From around age two to five, children enter the multiword or complex sentence stage, where they begin to construct sentences that are more complex and use grammar rules more consistently. At this stage, children's vocabularies also rapidly expand, and they learn to use language to communicate effectively with others.

It is important to note that every child develops at their own pace, and there is a wide range of what is considered normal development. However, if a child is not meeting expected language milestones or there are concerns about their language development, it is recommended to consult with a paediatrician or a speech-language pathologist for an evaluation.

Research on early language development has been ongoing for many years, and it is difficult to pinpoint a single individual or group who started it. However, some of the early pioneers in the field include Jean Piaget, Lev Vygotsky, and Noam Chomsky. Jean Piaget was a Swiss psychologist who developed a cognitive theory of child development. He proposed that children progress through a series of cognitive stages, and that language development is closely tied to cognitive development. Lev Vygotsky was a Soviet psychologist who emphasized the role of social interaction in child development. He believed that children learn through their interactions with more knowledgeable others and that language plays a crucial role in this process. Noam Chomsky is a linguist who proposed that humans are born with an innate ability to acquire language, which he called the "language ac-

quisition device." He argued that children can learn the complex grammar of their native language through this innate capacity. Since then, many other researchers have contributed to our understanding of early language development, including developmental psychologists, linguists, neuroscientists, and educators.

This article will try to summarize their findings in a way that would help teachers provide a language-rich and supportive environment for children. It will describe the important aspects of language development, such as comprehension, semantics, phonological and phonemic awareness, syntax, and pragmatics. It will explain how teachers can improve them and what may be the consequences of a child's difficulties if any of the aspects would not develop correctly.

Receptive language / comprehension

What is receptive language?

Receptive language refers to the ability to understand and comprehend language that is spoken or written by others. It involves the processing of linguistic information, including sounds, words, sentences, and meaning. Receptive language skills allow individuals to understand spoken or written language, follow directions, and comprehend academic content. It is an essential component of communication and is important for academic success, social interactions, and daily living. Receptive language skills develop in infancy and continue to develop throughout childhood, adolescence, and adulthood.

Some children who have difficulty understanding oral language (words and talking) may appear to be understanding because they may be able to pick up key words and get visual information from the environment or from gestures.

Receptive language is important to communicate successfully. Children who have understanding difficulties may find it challenging to follow instructions at home or within the educational setting and may not respond appropriately to questions and requests. Within the school setting, difficulties in understanding may lead to attention and listening difficulties and/or behavioural issues. As most activities require a good understanding of language, it may also make it difficult for a child to access the curriculum or engage in the activities and academic tasks required for their year level of school.

What are the building blocks of receptive language?

There are several building blocks of receptive language, which are essential for understanding and comprehending language. By developing these building blocks, children can improve their receptive language skills and better understand the language that they hear and read. Teachers and parents can support receptive language development by providing a language-rich environment, using visuals

to support comprehension, and providing explicit instruction on language skills. Here are some of the key building blocks:

- **Attention:** Attention is the ability to focus on what is being said or read. Children who struggle with attention may have difficulty following instructions or staying engaged in conversations.

- **Listening skills:** Listening skills involve the ability to process and interpret what is being said. Children with good listening skills can understand spoken language even in noisy environments or when there are distractions.

- **Vocabulary:** Vocabulary refers to the words that a child knows and understands. Children with a good vocabulary can understand a wide range of words and concepts, which is essential for understanding complex language.

- **Grammar:** Grammar refers to the rules for organizing words into sentences. Children with good grammar skills can understand the structure of sentences and how words are combined to convey meaning.

- **Comprehension strategies:** Comprehension strategies are the mental processes that we use to understand language. These include making predictions, asking questions, making connections, and visualizing.

- **Memory:** Memory is the ability to retain and recall information. Children with good memory skills can remember what was said or read and use that information to understand language.

How can a teacher improve receptive language?

Teachers can play an important role in improving the receptive language skills of their children. By creating a language-rich environment, using visuals to support comprehension, using repetition, providing explicit instruction, providing feedback, and differentiating instruction, teachers can support the receptive language development of their children and help them succeed academically and socially. Here are some strategies that teachers can use to support and enhance the receptive language development of their children:

- **Create a language-rich environment:** Teachers can create a language-rich environment by exposing children to a variety of spoken and written language. This can include reading aloud, using rich and varied vocabulary, and providing opportunities for children to discuss and use language in a variety of contexts.

- **Use visuals to support comprehension:** Visuals such as pictures, diagrams, and charts can help children understand and remember information. Teachers can use visuals to support comprehension by providing visual aids that reinforce key concepts or by using graphic organizers to help children organize information.

- **Use repetition:** Repetition is an effective way to help children remember and understand information. Teachers can repeat important concepts or information and provide opportunities for children to practice and apply what they have learned.

- **Use explicit instruction:** Teachers can provide explicit instruction on key language skills, such as grammar, syntax, and vocabulary. This can include providing direct instruction, modelling good language use, and providing opportunities for children to practice and apply what they have learned.

- **Provide feedback:** Teachers can provide feedback to children on their language use, both in terms of accuracy and comprehension. Feedback can help children identify areas where they need to improve and provide guidance on how to do so.

- **Differentiate instruction:** Teachers can differentiate instruction to meet the individual needs of their children. This can include providing additional support to children who are struggling with language skills, providing tasks that are more challenging to children who are excelling, and using a variety of instructional approaches to engage all children.

What are the consequences of a child's difficulties with receptive language?

Difficulties with receptive language can have a few consequences for children, both in terms of their academic success and their social and emotional well-being. It is important to identify and address any difficulties with receptive language early on, as this can have a significant impact on a child's overall development and academic success. Teachers, parents, and other professionals can work together to provide support and intervention to help children with receptive language difficulties succeed. Here are some potential consequences of difficulties with receptive language:

- **Academic struggles:** Children with difficulties in receptive language may struggle to understand academic content and instructions, which can make it difficult for them to succeed in school. They may have difficulty comprehending what they read, understanding complex vocabulary, and following directions.

- **Communication problems:** Receptive language difficulties can also lead to communication problems, both in terms of understanding what others are saying and expressing oneself effectively. Children may have difficulty participating in conversations, understanding social cues, and making friends.

- **Behavioural issues:** Children with receptive language difficulties may become frustrated or anxious when they are unable to understand what

is being said or when they have difficulty communicating their own ideas. This can lead to behavioural issues such as acting out, withdrawing, or becoming defiant.

- **Low self-esteem:** Children with receptive language difficulties may struggle with their self-esteem and confidence, as they may feel like they are not able to keep up with their peers or understand what is going on around them.

- **Long-term impacts:** Difficulties with receptive language can have long-term impacts on a child's academic and social success. Without support and intervention, these difficulties can persist into adulthood, potentially leading to challenges in the workplace and social settings.

Table 1:   Receptive language – expected milestones for a child of certain age period

before birth	hearing ability develops from the 26th week of pregnancy
0 – ½ year	prefers the mother´s voice
	able to identify native language
	intensive eye contact
	localizes sounds with the eyes
	perceives every phonemic difference in each language (is cosmopolitan)
½ – 1 year	triangulation / joint attention with caregiver to objects and events
	start of comprehension
	listens and observes attentively
	recognizes familiar words in flow of words understands single words (e.g., visible objects)
1 – 1 ½ year	understands 20-60 words in context
	understands simple situational prompts (give me the car)
1 ½ – 2 year	understands approx. 400 words
	understands two-part instructions (go to the door and turn on the light)
	understands words e.g., of objects which are not directly seen (understands ball when there is no ball)
2 – 3 years	understands more than 500 words
	understands first prepositions (under) and adjectives (small, big)

3 – 4 years	understands complex instructions
	understands absurd requests
4 – 5 years	comprehension of abstract concepts
	can follow longer stories
5 – 6 years	understands passive clause constructions

Semantics / vocabulary

What is semantics?

Semantics is the branch of linguistics that deals with the study of meaning in language. It focuses on how words, phrases, and sentences convey meaning, and how speakers and listeners interpret that meaning. Semantics explores the relationship between words and the concepts they represent, as well as how words combine to form meanings that are more complex. It also considers the ways in which context, culture, and individual experiences can shape the interpretation of language. Semantics is an important field of study in both linguistics and philosophy, and it has many practical applications, such as in natural language processing, language teaching, and translation.

Semantics plays a crucial role in effective communication. Without a shared understanding of the meaning of words and phrases, miscommunication and misunderstandings can occur. Semantics is essential for textual analysis. Understanding the meaning of words and sentences is necessary to interpret literature, speeches, and other texts accurately. Semantics is also important in information retrieval. Search engines and other information systems use semantic analysis to identify relevant information based on the meaning of the user's query.

What are the building blocks of semantics?

The building blocks that work together to create the complex and nuanced meanings we convey through language, are:

- **Words:** Words are the basic units of meaning in a language. They are combined in various ways to create meaningful sentences.

- **Phrases:** Phrases are groups of words that function as a single unit to convey a specific meaning. They can be noun phrases, verb phrases, adjective phrases, or adverb phrases.

- **Sentences:** Sentences are the largest units of meaning in a language. They consist of one or more clauses that express a complete thought.

- **Context:** Context is the situational or cultural setting in which language is used. It can help to determine the meaning of words and phrases.

- **Pragmatics:** Pragmatics is the study of how context and social factors influence the interpretation of language. It includes aspects such as tone of voice, facial expressions, and gestures.

- **Semiotic systems:** Semiotic systems refer to any system of signs and symbols used to communicate meaning, such as body language, visual cues, or written language.

How can a teacher improve semantics?

Teachers can improve semantics in several ways, including:

- **Expanding children's vocabulary:** Teachers can introduce new words to children and encourage them to use these words in context. This can help children develop a more nuanced understanding of the meaning of words and phrases.

- **Modelling language use:** Teachers can model how to use language effectively by using a variety of sentence structures, word choices, and expressions. This can help children learn how to communicate their thoughts and ideas more clearly.

- **Providing context:** Teachers can provide context for new vocabulary and concepts by connecting them to children's prior knowledge and experiences. This can help children make meaningful connections between words and ideas.

- **Encouraging critical thinking:** Teachers can encourage children to think critically about language use by asking questions about the meaning of words and phrases, the tone and mood of texts and the cultural context in which language is used.

- **Using multimedia resources:** Teachers can incorporate multimedia resources, such as videos, podcasts, and interactive websites, to help children learn and practice semantics in a variety of contexts.

- **Offering feedback:** Teachers can offer feedback to children on their use of language, including grammar, vocabulary, and syntax. This can help children identify areas where they need to improve and develop a more sophisticated understanding of semantics.

What are the consequences of a child`s difficulties with semantics?

It is important to identify and address semantic difficulties in childhood, as early intervention can help prevent these consequences and support healthy language development. Childhood difficulties with semantics, or the understanding and use of meaning in language can have a number of consequences. They can include:

- **Difficulty with comprehension:** Children with semantic difficulties may struggle to understand what others are saying or what they are reading, which can make it challenging to learn new concepts and skills.

- **Poor academic performance:** Semantic difficulties can affect a child's ability to learn and succeed in school, as they may have difficulty understanding and using key vocabulary and concepts.

- **Social communication difficulties:** Semantic difficulties can affect a child's ability to communicate effectively with others, which can lead to social isolation, misunderstandings, and conflicts.

- **Low self-esteem:** Children with semantic difficulties may feel frustrated, embarrassed, or ashamed when they struggle to understand or use language effectively, which can lead to a negative self-image.

- **Delayed language development:** If semantic difficulties are not addressed, they can delay a child's language development and hinder their ability to acquire new vocabulary and concepts.

- **Difficulty with problem solving:** Semantic difficulties can affect a child's ability to problem-solve and think critically, as they may struggle to understand and apply key concepts and ideas.

Table 2: Semantics – expected milestones for a child of certain age period

1 – 1½ year	first word expressive = (linking always same phonetic chain to meaning)
	words bound to situation
1½ – 2 years	vocabulary sprint – rapid expansion of vocabulary after age 18 months
	approx. 50 words expressive (critical 50-words limit)
	starts to name pictures in books
	overextensions and under extensions of word meanings

2 – 3 years	learning approx. 10 words every day	
	late talker does not use 50 words and does not combine 2 words together at the age of 2	
	produces neologism	
3 – 4 years	first superordinate concepts	
4 – 5 years	vocabulary growth through increasing knowledge and by applying word formation rules	
	can name items in a category	

Phonological and phonemic awareness / pronunciation

What is phonological and phonemic awareness?

Phonological awareness and phonemic awareness are both related to the under-standing and manipulation of sounds in language, but they refer to slightly different aspects of this skill.

Phonological awareness is the broader term and refers to the ability to recognize and manipulate the sounds of language at the word, syllable, and phoneme level. It includes the ability to distinguish between rhyming words, segment words into syllables, and blend sounds together to form words. Phonological awareness is a critical precursor to developing reading and writing skills.

Phonemic awareness, on the other hand, is a more specific aspect of phonological awareness that refers to the ability to recognize and manipulate individual phonemes, or the smallest units of sound in language. This includes the ability to segment words into their component phonemes, blend phonemes together to form words, and manipulate phonemes by adding, deleting, or substituting individual sounds.

Both phonological and phonemic awareness are important skills for developing reading and writing proficiency. Children who have well-developed phonological and phonemic awareness skills are better able to recognize and manipulate the sounds of language, which can help them learn to read and write more effectively. These skills are typically developed in early childhood through exposure to oral language and explicit instruction and practice in phonological and phonemic awareness tasks.

What are the building blocks of phonological and phonemic awareness?

These building blocks are developed gradually over time through a variety of experiences and activities, such as reading aloud, singing songs, playing word games, and engaging in explicit instruction and practice in phonological and phonemic awareness tasks.

The building blocks of phonological and phonemic awareness are:

- **Environmental sounds:** Recognizing and identifying sounds in the environment, such as animal sounds, transportation sounds, and natural sounds like water flowing.

- **Listening skills:** Paying attention to sounds and discriminating between them, such as identifying the sound that is different in a set of sounds.

- **Rhyming:** Recognizing and generating rhyming words, such as identifying words that rhyme with "cat" or generating a list of words that rhyme with "fun".

- **Syllables:** Identifying and segmenting words into syllables, such as clapping out the number of syllables in a word.

- **Onset and rime:** Identifying and segmenting the onset (initial sound) and rime (vowel and final consonant sounds) of words, such as identifying the onset and rime in "cat" (c-at).

- **Phonemes:** Identifying and manipulating individual sounds in words, such as identifying the first sound in "cat" (c), blending individual sounds together to form a word (c-a-t), or manipulating individual sounds by deleting or substituting them to create new words (cat - hat - sat).

How can a teacher improve phonological and phonemic awareness?

By using a variety of strategies to improve phonological and phonemic awareness, teachers can help their children develop critical language skills that will support their reading and writing proficiency. Teachers can improve phonological and phonemic awareness of their children, such as such as many ways:

- **Read aloud regularly:** Reading aloud to children regularly can expose them to a variety of sounds and language patterns. Choose books with rhymes, alliteration, and other sound patterns to help develop phonological and phonemic awareness.

- **Play word games:** Word games like rhyming, alliteration, and segmenting words into syllables and phonemes can be fun and effective ways to improve phonological and phonemic awareness.

- **Use manipulatives:** Manipulatives like letter tiles, magnetic letters, or other hands-on materials can help children visualize and manipulate sounds and words.

- **Explicit instruction:** Teacher can directly teach children the skills and concepts involved in phonological and phonemic awareness by using modelling, repetition, and explicit instruction to help them understand the building blocks of language.

- **Music and songs:** Songs and chants with repetitive sounds and patterns can be effective tools for improving phonological and phonemic awareness.

- **Multi-sensory activities:** Teacher can engage children in multi-sensory activities that involve seeing, hearing, and feeling language, such as tracing letters, clapping out syllables, or playing with sandpaper letters.

- **Differentiate instruction:** Teacher should use differentiated instruction to meet the needs of all children. He needs to provide extra support and practice for struggling children and challenge advanced children with more complex tasks.

What are the consequences of a child`s difficulties with phonological and phonemic awareness?

It is important to note that difficulties with phonological and phonemic awareness are not uncommon and can be addressed with appropriate intervention and support. Early identification and intervention are key to helping children develop these critical language skills and achieve academic success. Difficulties with phonological and phonemic awareness can have significant consequences for a child's language development, particularly in the areas of reading and writing. Some of the potential consequences include:

- **Difficulty learning to read:** Phonological and phonemic awareness are critical skills for learning to read. Children who struggle with these skills may have difficulty recognizing and manipulating the sounds in words, which can make it harder for them to decode written words.

- **Slow reading progress:** Children who struggle with phonological and phonemic awareness may have slower reading progress than their peers may. They may have difficulty sounding out words, reading fluently, and comprehending what they read.

- **Difficulty spelling:** Phonemic awareness is also critical for spelling. Children who struggle with this skill may have difficulty identifying and manipulating the sounds in words, which can make it harder for them to spell words accurately.

- **Reduced vocabulary development:** Phonological and phonemic awareness skills are closely tied to vocabulary development. Children who struggle with these skills may have a harder time understanding and learning new words.

- **Reduced overall language proficiency:** Phonological and phonemic awareness are foundational skills for language development. Children who struggle with these skills may have difficulty with other aspects of language, such as grammar and syntax.

Table 3: *Phonological and phonemic awareness – expected milestones for a child of certain age period*

0 – ½ year	coos, gurgle, squeals: vocal play sounds
	explores speaking organs
	first l all phase
	unconscious, unintentional sound production, controlled by tactile stimuli
	babies are cosmopolitans: by exploring they may produce each phoneme of every culture
½ – 1 year	babies gain control over speaking organs ->second l all phase: conscious sound production, controlled by hearing
	start babbling (= produces speech-like sounds) with single syllable sounds, then repeating them (canonical babbling = strings of repeated syllables (ba-ba-ba, da-da-da) or mixture of syllable (ba-da-ga)
	sound production approaches native language
	deaf children fall silent
1 – 1 ½ year	great variety of sounds
	sound monologues
	listens to others and imitates ("continuous echo")
1 ½ – 2 years	acquisition of phonemes follows a specific order e.g., early acquisition of labial sounds b, p, m (because they are visible)
	simplified pronunciation
2 – 3 years	is getting better in saying words correctly
	acquires lingual sounds (t, d), later pharyngeal sounds (k, g)
3 – 4 years	strangers can understand ¾ of what children say
	developmental stuttering is possible
	awareness of and ability to produce rhymes emerges
	learns complex consonant clusters
5 – 6 years	masters all sounds
	identifies first or last sounds in a word
6 – 8 years	uses phonological awareness skills when spelling
	substitutes or deletes sounds or syllables in words

Syntax / grammar

What is syntax?

Syntax refers to the set of rules and principles that govern the structure of sentences in a language. It involves the arrangement of words and phrases to create well-formed sentences that convey meaning. In syntax, we study the relationship between words and how they are combined to form phrases and sentences. This includes understanding the rules of word order, subject-verb agreement, tense, and other grammatical features that are used to construct meaningful sentences. Syntax is a crucial aspect of language comprehension and production. It enables us to understand the meaning of sentences and to communicate our thoughts and ideas effectively. Without syntax, language would be reduced to a set of disconnected words without any coherent structure or meaning.

What are the building blocks of syntax?

By understanding the building blocks of syntax, we can analyse and understand the structure of sentences in a language and use this knowledge to communicate more effectively. The building blocks of syntax are the fundamental elements that make up the structure of sentences in a language. These include:

- **Words:** The basic units of meaning in a language. Words can be combined to create phrases and sentences.

- **Phrases:** A group of words that function together as a single unit. Phrases can be noun phrases, verb phrases, prepositional phrases, and more.

- **Clauses:** A group of words that contain a subject and a predicate and can function as a complete sentence or as a part of a larger sentence.

- **Sentence structure:** The way words, phrases, and clauses are combined to create well-formed sentences. This includes understanding the rules of word order, subject-verb agreement, tense, and other grammatical features.

- **Function words:** Words like articles, prepositions, and conjunctions that provide important information about the relationship between other words in a sentence.

- **Inflectional markers:** Affixes that are added to words to indicate grammatical information like tense, number, and gender.

How can a teacher improve syntax?

Teachers can help children improve their syntax and sentence structure with different strategies, which can have a positive impact on their overall language proficiency and academic success. Here are some of them:

- **Modelling:** Teachers can model correct sentence structure and use of grammar in their own language and encourage children to imitate them.

- **Explicit instruction:** Teachers can provide explicit instruction on the rules of syntax and grammar, including word order, verb tenses, subject-verb agreement, and other grammatical features.

- **Sentence combining:** Teachers can provide opportunities for children to practice combining simple sentences into more complex ones. This can help children develop a better understanding of sentence structure and improve their ability to create well-formed sentences.

- **Peer feedback:** Teachers can encourage peer feedback and editing. This can help children learn from each other and develop a better understanding of sentence structure.

- **Scaffolded writing tasks:** Teachers can provide writing tasks that are scaffolded with a focus on building sentence complexity. They can provide graphic organizers or sentence frames to support children's sentence creation.

- **Vocabulary instruction:** Teachers can teach children new vocabulary words in context and provide examples of how to use them in sentences. This can help children learn to create more complex sentences that incorporate a range of vocabulary.

What are the consequences of a child`s difficulties with syntax?

It is important for parents and educators to be aware of the signs of syntax difficulties and to provide appropriate support and interventions to help children overcome these challenges. Early intervention can be particularly important in promoting positive language development and academic success. Children who experience difficulties with syntax may face several consequences, including:

- **Limited ability to express themselves:** Children who struggle with syntax may have difficulty expressing themselves clearly and effectively. They may struggle to convey their thoughts and ideas in a way that is easily understood by others.

- **Poor academic performance:** Syntax difficulties can also affect a child's academic performance, particularly in subjects that involve reading and writing. Children may struggle to comprehend complex sentences and written texts and may have difficulty producing well-structured essays and other written assignments.

- **Social difficulties:** Children with syntax difficulties may experience social difficulties, as they may struggle to communicate effectively with peers and adults. They may be more likely to experience frustration and anxiety in social situations and may be less likely to participate in-group activities.

- **Reduced confidence:** Children who struggle with syntax may become frustrated and discouraged when their communication efforts do not meet their expectations. This can lead to reduced confidence and self-esteem, which can further affect their communication and academic performance.

- **Misunderstandings and miscommunication:** Syntax difficulties can lead to misunderstandings and miscommunication, as children may misinterpret the meaning of sentences and struggle to convey their own intended meaning.

Table 4: Syntax – expected milestones for a child of certain age period

1 ½ – 2 years	two-word combinations and more word utterances
	utterances are telegraphic with few grammatical markers
	first phase of questioning: marks questions by raising pitch at the end of a phrase
2 – 3 years	speaks in sentences with 3-4 words
	multi-word sentences with few grammatical forms, frequent word omission
3 – 4 years	second phase of questioning: using interrogative pronouns (Who? Why? Where?)
	acquisition of grammatical peculiarities
	basic sentence forms are acquired
	derives well-known rules (e.g., house/houses -> mouse – mousses)
4 – 5 years	uses more complex sentence forms (main and subordinate clause)
	learns irregular plural e.g., mice
5 – 6 years	Produces complex sentences by using a range of different connectiveness ('because', 'if', 'but' or 'when') in a correct grammatical form

6 – 8 years	grammar is mature, uses appropriate grammar in speech and written work
	becomes a better storytelling
	learns to put words together in different ways and builds different types of sentences

Pragmatics / communication

What is pragmatics?

Pragmatics is a subfield of linguistics that studies the use of language in context. It focuses on how people use language in social situations to achieve their goals, convey meaning, and interact with others. Pragmatics is concerned with the ways in which language is used beyond its literal meaning, and how it is shaped by factors such as context, social norms, and shared knowledge. Pragmatics is an important aspect of language development and plays a crucial role in communication and social interaction. Children who struggle with pragmatics may have difficulty understanding social cues and norms and may struggle to communicate effectively with others. As a result, they may experience social difficulties and may be at risk for academic and emotional problems.

What are the building blocks of pragmatics?

Pragmatics, the use of language in social contexts, involves a range of building blocks. These building blocks are closely intertwined and interdependent, and they develop and mature over time as children gain more experience and exposure to different social contexts and language use. Some of them are:

- **Turn taking:** The ability to take turns in conversation and to respond appropriately to the cues of the speaker.
- **Eye contact:** The ability to maintain appropriate eye contact during conversations and to use eye contact to convey different meanings.
- **Body language:** The ability to use body language, such as gestures and facial expressions, to convey meaning and to understand the body language of others.
- **Prosody:** The ability to use changes in tone, pitch, and intonation to convey different meanings and emotions.
- **Empathy:** The ability to understand and respond appropriately to the feelings and needs of others.

- **Contextual understanding:** The ability to understand the social and cultural context in which communication is taking place and to adapt language use accordingly.

- **Pragmatic conventions:** The ability to understand and use the social conventions of language use, such as turn-taking rules, greetings, and polite language.

- **Narrative skills:** The ability to use language to tell stories and to understand the structure and components of different types of narratives.

- **Nonverbal communication:** The ability to use and interpret nonverbal cues, such as facial expressions and body language, to convey meaning.

- **Problem-solving and negotiation skills:** The ability to use language to negotiate and solve problems in social situations.

How can a teacher improve pragmatics?

Teachers can improve children's pragmatics (use of language in social contexts) by providing opportunities for them to practice and develop their pragmatic skills in a supportive and structured environment. By using these strategies and providing a supportive and structured learning environment, children can become more effective communicators in a variety of social situations. Some strategies that teachers can use to improve pragmatics include:

- **Role-playing:** Teachers can use role-playing activities to help children practice different social scenarios and appropriate language use. This can help them understand the expectations of different social situations and develop the language skills needed to navigate them.

- **Modelling:** Teachers can model appropriate language use in different social contexts and explain the reasons behind their language choices. This can help children develop an understanding of the social and cultural conventions of language use.

- **Collaborative group work:** Teachers can structure group work activities that require children to communicate and negotiate with each other to achieve a common goal. This can help them develop problem-solving and negotiation skills, as well as the ability to use language appropriately in social situations.

- **Explicit instruction:** Teachers can explicitly teach pragmatic skills and strategies, such as turn-taking, active listening, and appropriate language use in different social contexts. This can help children develop a deeper understanding of pragmatic conventions and how to apply them in real-world situations.

- **Feedback and reflection:** Teachers can provide feedback to children on their language use in different social situations and encourage them to reflect on their own language choices and the impact they have on others. This can help children become more self-aware and develop the ability to adjust their language use based on the needs of different social contexts.

What are the consequences of a child`s difficulties with pragmatics?

It is important for children with poor pragmatic skills to receive appropriate support and intervention to address their difficulties and minimize the potential negative consequences. This may include speech therapy, social skills training, and other interventions tailored to the child's individual needs. Those children who have difficulties with pragmatics (use of language in social contexts) may experience a range of consequences, including:

- **Difficulty making friends:** Children with poor pragmatic skills may struggle to make friends and form social connections with their peers. They may have difficulty initiating conversations, responding appropriately to social cues, and understanding the social and emotional aspects of communication.

- **Misunderstandings:** Children with poor pragmatic skills may have difficulty understanding the intended meaning behind language use, leading to misunderstandings and miscommunications. They may struggle to understand sarcasm, irony, or humour, and may take language at face value.

- **Inappropriate language use:** Children with poor pragmatic skills may struggle to use language appropriately in different social contexts. They may use language that is too formal or too casual or may use language that is inappropriate for the situation.

- **Academic difficulties:** Poor pragmatic skills can also affect a child's academic performance, particularly in subjects that require strong language skills. Children may struggle to understand complex instructions, follow classroom discussions, and comprehend written texts.

- **Social isolation:** Children with poor pragmatic skills may feel isolated and disconnected from their peers, leading to feelings of loneliness and low self-esteem.

- **Behavioural issues:** Some children with poor pragmatic skills may exhibit behavioural issues, such as aggression or defiance, because of their difficulty in communicating effectively with others.

- **Poor job prospects:** Poor pragmatic skills can affect the ability to succeed in the workplace as an adult, particularly in jobs that require strong communication and social skills.

Table 5: Pragmatics – expected milestones for a child of certain age period

0 – ½ year	vocalizes in response to speech
½ – 1 year	initiates vocalizing to another person
	starts to communicate intentionally
	uses sounds and gestures to get and keep attention
	communicates with gestures like waving and pointing
	turn-taking in games and vocalizations
4 – 5 years	asks for the meaning of words
6 – 8 years	can retell imaginary and real events
	adult-like conversation
	uses languages at a higher level to make jokes, argue point of view

Conclusion

It is important for teachers to be aware of the language development of children because language is a fundamental tool for communication, socialization, and learning. Children who struggle with language development may have difficulties expressing themselves, understanding instructions, or comprehending academic content. This can have a significant impact on their overall academic performance and their ability to interact with peers and adults.

By being aware of language development milestones and potential issues, teachers can identify children who may need extra support and tailor their instruction to better meet their needs. They can also provide language-rich learning environments that promote vocabulary development, listening and speaking skills, and literacy.

Furthermore, teachers who are knowledgeable about language development can also play an important role in helping children who speak languages other than English to develop proficiency in English while maintaining their home language. This is important for academic success and maintaining cultural and linguistic diversity.

Acknowledging the progression in children's language development, Cummins framework (1999) for language development distinguishes between Basic Inter-personal Communicative Skills (BICS), so-called social language, which involves such abilities as retelling events, describing experiences, narrating activities, offering personal opinions, all within the general give-and-take of conversation with family and friends, and specific disciplinary and classroom-related language skills, which are known as cognitive academic language proficiency, or CALP. His framework suggests difficulty in acquiring these can be moderated by situating these forms of language in meaningful contexts. A range of meaningful contexts, such as those available in natural contexts, are therefore vital to develop pragmatic language skills.

Why language development in the natural environment?

Irena Kokalj and Nina Novak

What opportunities are there for outdoor learning in kindergartens and schools?

The starting point is the available outdoor environment, i.e., the school grounds, schoolyard, green areas, and school garden. In all these environments, formal and non-formal learning related to everyday life takes place. In addition, kindergartens and schools may make use of the wider local environment, accessible on foot, such as nearby parks, meadows and forests, villages, and urban settlements. Outdoor learning can also take the form of full-day or residential programmes using transport, such as excursions, visits to museums and cultural institutions, or even a school in nature with accommodation in another location. Outdoor learning encompasses all that children do, see, hear, or feel in their outdoor spaces. This includes:

- experiences that practitioners create and plan for,
- spontaneous activities that children initiate, and
- naturally occurring cyclical opportunities linked to the seasons, weather, and nature.

When choosing a rich outdoor learning environment, teachers consider whether it offers opportunities:

- for students to handle natural materials such as: stones, branches, water, mud, etc.
- to become a classroom, a laboratory, a gym, a playroom, a workshop, a place for exploration, a place for calm, a place for participation (e.g., teamwork).

How does the outdoor environment promote learning?

The aim of any education system is to ensure that the physical environment is safe and appropriate and provides a rich and varied range of experiences that promote children's learning and development. An important part of learning outdoors is the departure from the familiar context of the classroom and traditional forms of learning (Broderick and Pearce, 2001; Rea, 2008). Waite and Davis (2007) noted that free play and child-initiated exploration of the natural environment appeared to engage children to a greater extent than adult-led activities in Forest School. The children demonstrated high levels of involvement, which are considered to

signal that deep learning is taking place (Pascal and Bertram, 1997 in Waite, 2010). There are indications, therefore, that learning is affected by the outdoor context, but does being outside necessarily change the pedagogy employed in that context to one which incorporates greater choice and enjoyment for learners?

The way in which the environment is designed, equipped, and organised determines approaches to learning. Research shows that outdoor learning has a huge range of benefits for children. Being out in the fresh air, regardless of the weather, has been shown to improve mood, reduce stress, improve eyesight, and increase physical activity. Outdoor learning is important because it:

- supports the development of healthy and active lifestyles;
- offers children opportunities for physical activity, freedom and **movement**;
- promotes a sense of **confidence and well-being**;
- provides opportunities for developing harmonious relationships with others, through negotiation, taking turns and **cooperation**;
- supports those children who learn best through activity or **movement**;
- provides safe and supervised opportunities for children to experience new challenges, assess risk and **develop the skills to manage difficult situations**;
- supports children's developing **creativity and problem-solving skills**;
- provides rich opportunities for **imagination, inventiveness and resourcefulness**;
- gives children contact with the nature and offers them unique experiences, such as direct contact with the weather and seasons. (Kellert, 2005; Hopwood-Stephens, 2013).

Thus, outdoor learning enables the holistic development of the child across several areas. Rickinson et al. (2004) highlighted the following as the most important:

- **cognitive**: knowledge, understanding and other learning outcomes;
- **affective**: attitudes, values, opinions, beliefs, self-concept;
- **social:** communication skills, leadership and teamwork skills, caring of social skills;
- **physical/behavioural**: endurance, motor skills, healthy body and mind.
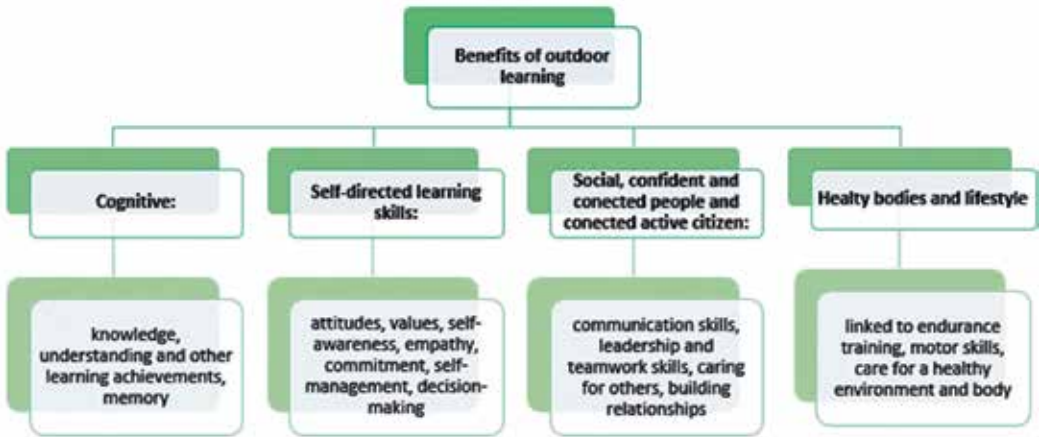
Figure 1: *Benefits of outdoor learning (adapted from Rickinson et al., 2004; Kellert, 2005; Hopwood-Stephens, 2013).*

Outdoor learning is most effective when the activities involve elements of creativity and interaction. Some consider that content should be cross-curricular and designed to stimulate pupils' curiosity and, above all, emotion and experience (Šebjanič and Skribe Dimec, 2019).

Stimulating outdoor learning is also inclusive. Environment plays a fundamental role in a child's early development and has benefits in engaging children with Special Educational Needs. Good play areas develop both gross and fine motor skills. They help children to improve mobility and coordination through the vestibular system (balance) and proprioception (body awareness and spatial skills). A safe outdoor environment to climb, balance, and move over different levels and surfaces in a fun and playful way, with friends, improves children's development without it feeling like a chore. Spaces for playing that allow them to explore where their body is in space, and how body parts move, are plentiful. Playing inside dens that they have built themselves, for example, can offer children a sense of comfort and security, while logs may challenge physical skills. Early years practitioners report how outdoor play leads to improve behaviour and makes it easier for children to build friendships. It provides opportunities to test and develop appropriate social interactions. Children learn how to communicate, share, and deal with conflict, while having fun in a low-stress environment.

Developmental driving forces within the outdoor learning environment

Key driving forces within the outdoor learning environment that promote the development of language and language learning outdoors include:

CURIOSITY	MOVEMENT	SENSORY PERCEPTION	IMAGINATION

Curiosity

Curiosity is a complex emotional and mental state that accompanies the desire to learn about the unknown (Bregant, 2010). Curiosity is recognised as a driving force for children's development in general and, as such, one of the most important goals of education. Children build and shape their knowledge by interacting with other people, objects, materials and creatures. Interaction starts with children's curiosity about unknown aspects of the environment, then interaction with the environment stimulates further curiosity to better understand and express their world. The best way to encourage children in science is firstly to arouse their curiosity, and then to organise an environment that offers a variety of answers. Curiosity is reflected in children's fascination by novelty, their keen observation of details and in asking questions such as what it is, what is it like, why is it like that, how is it changing, why is it changing. The child is a spontaneous explorer who (Krnel, 2018):

- is driven by curiosity,
- is able to ask questions,
- is ready to explore and
- is driven by a desire to discover for themselves, even though this may take time.

Figure 2: View of curiosity as a facilitator of learning and learning progress (adapted from Bregant, 2010)

The diagram (adapted from Bregant, 2010) in Figure 2 illustrates the view of curiosity as a facilitator of learning and learning progress. The diagram shows the workflow of curiosity:

- when children are curious, they explore, discover new things - new discoveries and insights make them happy;
- children repeat what pleases them - the more they repeat, the more skilled they become;
- as they become more skilled, their confidence and courage grow - and they become even more curious;
- because children are social and sociable beings, they enjoy sharing their experiences;
- when encouraged by friends and supportive adults, children are happy, rewarded with approval and become more confident and gaining self-esteem.

So, the circle is complete and can begin again.

Examples of activities in nature that encourage curiosity:

- observing animal movements (e.g., ants, earthworms) and making predictions;
- observing the development of insects (e.g., butterflies);
- observing elements in nature (e.g., a hive, stump, tree);
- listening to nature sounds and asking questions;
- discovering the shades of colours of leaves, and texture of bark;
- identifying the age of items from nature and arranging them in a timeline;
- exploring soil and its properties.

Movement

According to the literature, one of the main advantages of using the outdoor environment is that it provides children with the space to move freely (Rivkin, 1995 in Maynard, 2007). Movement, along with play, has been described as one of the most natural and powerful modes of learning for young children (Bilton, 2002 in Maynard, 2007). As numerous writers have noted (e.g., Rivkin, 1995; Bilton, 2002; Ouvry, 2003 in Maynard, 2007), children can construct on a bigger scale, explore the world at first hand and experience natural phenomena such as the weather, the changing seasons and shadows when outdoors. Children's movements through their environment are not just simply 'exercise' but are also about learning about and controlling their bodies and learning about and respecting the rules of the environment. Through control of self and respect for the environment in their movement, children gain a sense of independence and autonomy, while learning how to interact with others and the world around them. In their relationships with peers, children can also more easily move away from confrontation when outside and so are less likely to show signs of frustration and lack of cooperation (Ouvry, 2003 in Maynard (2007).

Examples of activities in nature that encourage movement:
- tactile stimulation stimulated by play in the sandpit or soil and mud: games with natural objects, transplanting flowers, kneading different natural material, interaction with water;
- proprioception developed by traversing rough terrain, overcoming obstacles, throwing games, climbing trees and slopes, helping to carry branches, pushing logs;
- vestibular or balance activities stimulated by walking on a footbridge or along logs, swinging from branches, crawling through tunnels, climbing, and jumping.

Sensory perception

Children receive a lot of information or stimulation from the physical environment. They then process, seek to understand, and respond to this information or stimuli. The way in which they receive information from the environment and the process that makes sense of the information and directs whether it will go to the brain or be filtered out is called sensory processing. No one has perfect sensory processing. However, we can improve sensory perception significantly. Generally providing rich and varied opportunities to use the senses are enough. Children's brains are primarily sensory processors until the age of seven, which makes sensory training even more important for toddlers. Playground games, climbing trees and exploring the forest offer means to learn to sense the environment (Bregant, 2010).

Examples of activities in nature that encourage sensory perception:
- Smell: unusual plant smells - sage, yarrow, mint, soil smell, spring morning smell, storm smell, rain on hot asphalt;
- Sight: colour of clouds, shades of green, shadows in the forest, colours of flowers, observation of phenomena (storm weather, sky at sunset), autumn colours of leaves, counting branches/leaves, arranging, sorting, adapting (leaf - tree - fruit);
- Hearing: messages of birdsong - the jay like a forest policeman, sounds by a stream, silence in a karst cave, sounds near and far);
- Touch: textures of bark, leaves, soil, stones, clay substrate, water temperatures in streams and lakes,
- Taste: forest fruits, vegetables, young beech leaves, sorrel.

Imagination

Outdoor learning encourages creativity and innovation; children are challenged to think outside the box and solve problems in novel ways. This can help build critical thinking and problem-solving skills, both of which are valuable in various aspects of everyday life. Ouvry (2003) in Maynard (2007) maintains that in the outdoor environment, children also have the space to engage in and develop their fantasy play. This may particularly be the case for boys who appear drawn to fantasy play involving superheroes (Paley, 1984 in Maynard, 2007), which usually entails a great deal of running and chasing. Further, adults appear to relate differently to children in the outdoor environment. The undefined space seems to enable us to imagine other ways of being in relation to others (Waite, 2013).

Examples of activities in nature that encourage the imagination:
- personification of natural objects;
- forming rhymes with named features of the environment;
- using natural material as props in performance and telling of stories;
- imagining mysterious inhabitants of the forest and fantasy lands;
- reflecting on the origins of legends;
- natural space as a space for composition;
- empathising with trees or other natural phenomena (becoming nature);
- speculating about food chain/ webs.

Childhood is understood as a period of growth and development, as well as a period of intense learning. Periods of time in brain development that allow for the most optimal development of a particular area of the brain are often referred to as critical periods. What is learned at that time is learned more quickly and more thoroughly than at any other time. During a critical period, the influence of the environment is extremely important including the quality of nutrition, provision of a safe and supportive environment that allows optimal achievement of the individual's innate potential. There are different requirements for different areas of the brain in different sensitive periods, for example, for speech, the period up to

the age of four is crucial, although there are individual variations. Factors such as exposure to language, social interactions, and cultural context can influence language development. Providing a language-rich environment, engaging in conversations, and encouraging literacy activities supports optimal language development. Bregant (2010) writes about research showing that children as young as 2 years old can speak up to 300 words more than their peers if their parents talk with them more intensively. Reading aloud stimulates children's brain development and child's ability to learn can also increase by a quarter. In outdoor spaces where children, peers and adults converse more freely, children may experience enhanced vocabulary growth, while the open-ended outdoor environment can generate story telling by both adults and children, as we discuss further in the next part.

How to use the outdoor environment for learning?

Outdoor learning complements indoor learning and should be regarded as equally important. Play and learning that flow seamlessly between indoors and outdoors enable children to make the most of the resources and materials available to them and develop their ideas without unnecessary interruption.

Effective practice outdoors involves providing opportunities for children in meaningful, engaging experiences that support their development. This will include opportunities for children. Outdoors, children can:

- be curious, adventurous, noisy, messy;
- talk, listen, interact, make friends;
- imagine, invent, fantasise;
- create, invent, construct, deconstruct;
- investigate, discover, experiment with their own ideas;
- make sounds and music, express ideas and feelings;
- find patterns, make marks, explore different media and materials;
- be active, run, climb, pedal, jump, throw;
- dig, grow, nurture, cultivate;
- hide, relax, find calm, reflect;
- have responsibility, be independent, collaborate with others.

When we talk about the environment (nature) into which we go to learn, we have to distinguish between the environment (nature) which we use as a source for learning and the environment (nature) which we use to change the learning space itself. When learning outdoors, we need to figure out relationships between environment as space and environment as a source for learning (Novak, et al 2022). Waite et al. (2016, 10) talk about outdoor learning pathways that influence a child's achievement or progress in different areas (Figure 3). The pathway to raised attainment through outdoor learning, wellbeing, confidence, experiencing success, social skills, self-regulated behaviours, engagement, and enjoyment is a holistic approach that recognizes the interconnectedness of these factors in promoting academic achievement and personal development.

Figure 3: The pathway to raised attainment through outdoor learning (Waite et al., 2016, p. 10).

Outdoor learning often involves fun and exciting activities that tap into students' natural sense of joy and wonder. These are experiences which children highly value and enjoy. When children feel good, they are better able to concentrate and engage with learning Thus, outdoor learning captivates children's interest through hands-on, interactive experiences. When children find learning **enjoyable**, they are more likely to be motivated, curious, and open to new experiences, leading to **increased engagement.** Being outdoors in nature stimulates curiosity and provides a sense of novelty that can increase motivation and **engagement** with learning. When children are actively engaged, they are more likely to absorb information, participate actively, and retain knowledge. Outdoor learning also often involves **collaborative activities** that require communication, cooperation, and teamwork. By engaging in group tasks, children develop social skills such as active listening, effective communication, empathy, and conflict resolution. These skills contribute to **positive relationships** with peers, teachers, and the wider community. Also, outdoor environments encourage self-regulation skills, such as planning, goal setting, and managing emotions. Children may need to follow instructions, make decisions, and take responsibility for their actions. Developing **self-regulated behaviour** enables students to become independent learners, stay focused, and persist in their endeavours. Outdoor learning provides a diverse range of experiences where children can **succeed** in different ways. Successes could be related to mastering a new skill, accomplishing a physical challenge, or working effectively in a team. These experiences foster a sense of achievement, build self-esteem, and create positive associations with learning, motivating children to strive for further success in

pursuits. Outdoor learning experiences offer many challenges and opportunities for personal growth. When children overcome obstacles, try new activities, and achieve success, their **confidence** grows. Confidence is vital for progress as it helps students believe in their abilities, take risks, and persevere when faced with difficult tasks. All these factors contribute to children's sense of wellbeing. Outdoor learning also promotes **wellbeing** by providing opportunities for physical activity, exposure to natural environments, and a break from sedentary routines. Spending time outdoors has been linked to reduced stress levels, increased focus, improved mood, and enhanced overall well-being. **Wellbeing** encompasses physical, mental, and emotional health and is acknowledged as foundational to improved educational attainment.

Specific elements of learning in nature for early language development

As we have shown in earlier sections, learning in natural environments provides a highly stimulating context that engages all the senses, making learning experiences more enjoyable and memorable. The outdoor environment offers key opportunities to support language development. Exploring the world around them allows children to learn and practise using a wide vocabulary and develops a range of language skills. Speaking and listening as communicative activities are considered essential elements to the growth of language and thinking (Vygotsky, 1978; Bruner 1983; Chomsky 2002). Alexander (2004), Chambers (2007) and Mercer (2007) are all respected proponents of using the spoken language in primary learning to underpin cognitive growth as well as reading and writing skills.

To develop speech and language skills, it is important to provide a learning environment (Istance and Dumont, 2010):

- where learning is put at the centre, engagement in learning is encouraged; students see themselves as learners, and learning is meaningful;
- that is sensitive to individual differences, including previous knowledge (taking account of diversity among pupils);
- that facilitates social and collaborative learning;
- that includes evaluation aligned to objectives, with a strong focus on formative feedback;
- that is aligned as much as possible with the motivation of the learners and the importance of their emotions.
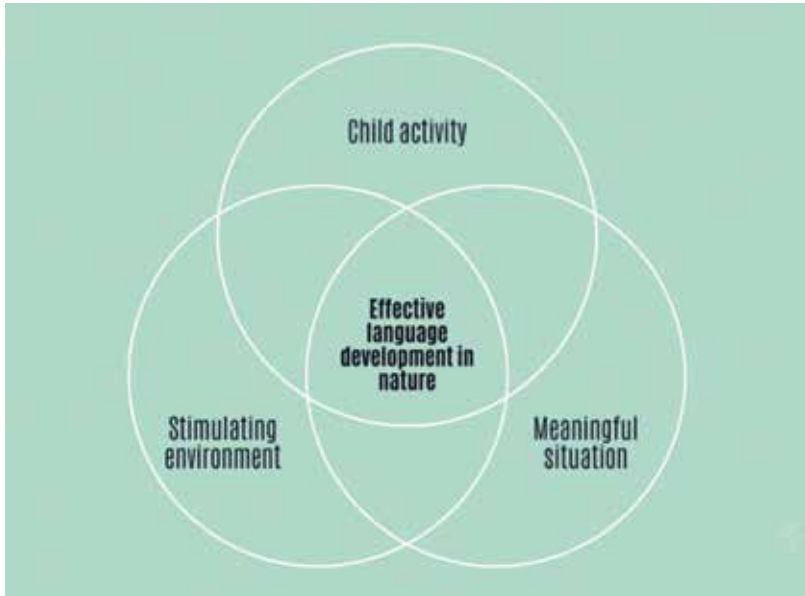
Figure 4: Elements of generic model of early language development in nature (ELaDiNa)

An effective learning environment for language development and learning is achieved by:

- ensuring the child's **active** role,
- making learning **meaningful** for the child and
- choosing an environment which is **stimulating** and safe.

These are the three key elements of the ELaDiNa project, which explored early language development in nature (see Figure 4 above).

Learning language in nature provides opportunities for children to develop their language skills in a meaningful context. Exploring the natural environment exposes children to a rich array of plants, animals, and natural phenomena. They can learn new words and expand their vocabulary by identifying and naming different species, describing the characteristics of objects they encounter, and discussing their observations. Nature offers diverse sensory experiences that can stimulate children's descriptive language skills. They can use adjectives, adverbs, and sensory words to articulate their perceptions of the sights, sounds, smells, textures, and tastes they encounter in nature. Nature provides inspiration for storytelling and imaginative play. Children can create stories about the animals they encounter, imagine the lives of plants and trees, or invent narratives inspired by natural landscapes. Engaging in these activities enhances their narrative skills, including plot development, character creation, and storytelling techniques. Being in nature encourages conversations and discussions among children. They can engage in dialogue with peers, teachers, or parents about their experiences, observations, and

questions related to the natural world. These conversations promote the development of oral language skills, including turn-taking, active listening, and expressing ideas and opinions. Exploring nature nurtures scientific inquiry and vocabulary acquisition. Children can engage in scientific investigations, ask questions, make predictions, and use scientific terms to describe their findings. This exposure to scientific language supports their understanding of scientific concepts and cultivates critical thinking skills. Thus, the natural environment offers meaningful contexts suitable for basic interpersonal communicative skills (BICS) and cognitive academic language proficiency (CALP) development (Cummins, 1999).

Conclusion

Outdoor activities throughout childhood offer an important contribution to a child's education. They are effective ways for children to connect with nature, learn new skills, and develop social relationships. Outdoor activity can include anything from nature walks, gardening, and camping to team-building exercises and sports.

One benefit of outdoor activity during kindergarten and primary education is that it promotes physical activity. With the rise of technology and sedentary lifestyles, it is more important than ever to get children up and moving. Outdoor activities provide an opportunity for children to run, jump, climb, and explore, all while getting fresh air.

In addition to physical activity, outdoor activity also promotes mental health and well-being. Research has shown that spending time in nature reduces stress, anxiety, and depression. Being outdoors provides a sense of calm and relaxation, which can help children feel more centred and focused.

Outdoor environments also provide many cross-curricular opportunities for children to learn new skills. Gardening, for example, teaches children about plant life cycles, nutrition, and sustainability. Team-building exercises help children learn how to work together and communicate effectively. Camping and survival skills teach children how to be resourceful and independent. Finally, learning outside the classroom allows children to develop a diversity of social relationships with their peers and teachers.

What is most important in relation to the ElaDiNa project is that all the above act as mediators in support of children's language skills because they require children to develop effective means of expressing themselves and communicating with others, thus providing a powerful impetus and vehicle for enhancing early language development.

The role of a teacher

Katarina Dolgan and Janja Cotič Pajntar

In this section, different aspects within the role of the teacher are described to illustrate what should be considered in working with children between 3 to 7 years. By 'teacher' we mean all professionals who are working with children in kindergartens or schools.

Planning and considering the child's abilities, interests, needs, and wishes

When considering a young child's abilities, interests, needs and wishes, teachers should keep several things in mind, such as developmental milestones, individual differences, learning styles, curriculum standards and parental involvement. With carefully planned activities, teacher can create a learning environment that is engaging and relevant to each child's individuality.

Children love to **learn by doing**. Teachers can plan hands-on activities that allow children to use their senses and interact with their environment. For example, they may plan activities that involve building with blocks, painting, or exploring nature. Kindergarten children also enjoy playing and **learning with their peers**. That is why teachers should plan group activities that encourage children to collaborate and work together in games, group projects, or classroom discussions. Children also enjoy **expressing themselves creatively**, so teachers should allow them to explore their imagination and artistic abilities by planning activities that involve music, drama, or storytelling. Teachers should also plan **physical activities** that involve dancing, playing or outdoor games to promote gross motor skills and help children release energy, because they need to move and be active. Different abilities and interests of children encourage teachers to provide opportunities to do individualized activities that cater to each child's unique needs and preferences. By including a range of activities that consider each child's abilities, interests, needs, and wishes, teachers will create a learning environment that is engaging and relevant to each child's **individuality**.

Teacher should also be aware of the **developmental milestones** that children typically reach at certain ages. This can help in planning appropriate activities and learning experiences that match the child's level of development. Every child is unique, and teachers should take the time to observe each child and get to know their strengths and challenges, preferences, and personality. This can help in **ensuring a diversity of learning experiences** that are engaging and relevant to each child.

Children have different **learning styles**, which means they learn best in different ways. Some children may be visual learners, while others may be more auditory or kinaesthetic learners. Catering for different learning styles will ensure that all children can participate and learn.

Teachers also need to take account of the **curriculum standards** that the child is expected to meet. Keeping these in mind helps in planning activities and learning experiences that align with these standards and prepare the child for future learning.

Parents are a key partner in every child's learning journey and teachers should communicate with them and involve them in their child's education. Parents can provide valuable insights into their child's abilities, interests, needs, and wishes, which helps ensure that their kindergarten or school experiences are relevant to the child's home environment and interests.

By recognising and including all these factors, teachers can plan and deliver effective learning experiences that are engaging and relevant to each child's abilities, interests, needs, and wishes.

Ensuring a supportive learning environment

An ongoing commitment to providing a supportive learning environment greatly contributes to the quality of life of children in kindergarten or in school. A supportive kindergarten and school environment is a healthy, safe and pleasant context that protects the privacy of the children in the group, allows them space to be different, and is flexible and stimulating according to the age and needs of individual children through the activities taking place within the playroom or outdoors.

A stimulating learning environment allows for both planned and unplanned activities, including children's self-initiated exploration. Teachers should consider and prepare a variety of materials and resources to enable children to explore, play and learn in different contexts.

In addition to preparing a space and materials that children can use independently, the active role of the adult is also important. Teachers need to be aware that a space alone, with its rich didactic materials and resources available to children always, may not constitute a stimulating learning environment for all children. For example, some children may always play with the same toy or play the same game and may not be able to make use of what is available to them without support. In such cases, the teacher may need to teach these children how to use resources and materials, how to 'use' the space in the nursery and how to play with other children. A stimulating learning environment therefore includes, above all, a teacher who observes, monitors, and supports the development and learning needs of each individual child in the kindergarten/school.

Facilitating various didactic approaches and methods

The role of the adult in facilitating a variety of didactic approaches and methods is closely linked to provision of a quality educational curriculum. What is meant by a **quality educational curriculum**? In the broadest sense it means a curriculum based on pedagogical goals, values and approaches which enable children to reach their full potential of their emotional, cognitive, and physical development and well-being in a holistic way. Thus, the child is central to assessing what constitutes quality. Yet, at the same time, quality also requires a well-defined adult role, where teachers collaborate with children, colleagues and parents and reflect continually on their own practice with a view to improving it and their support for each individual child.

A quality curriculum is essentially a cycle of action research from written curriculum to planned curriculum and from implemented or executed curriculum to evaluated curriculum, with the aim to continuously improve the educational process for the highest benefit of children, their learning and their well-being in kindergarten or school. Teachers work from theory into practice and from evaluation of practice to constantly refine their understanding and implementation of theory.

The planning of educational work in line with the written curriculum and the children's developmental and learning needs should include the following principles, that it:
- represents a support for teachers in the workplace,
- leads teachers to think about their work with children,
- gives teachers the opportunity to monitor the development, learning and progress of each child,
- gives teachers the opportunity to monitor their own professional work,
- ensures a diversity in activities for children,
- ensures a balanced range of activities from all learning areas for children,
- exceeds the routine and allows for improvisation,
- considers the most appropriate environments for your child's learning and play,
- means a balance between learning inside and learning outside the classroom.

The next very important feature to consider in planning is balance. Through **balanced planning** for goals across all areas of the curriculum in different learning environments, a teacher provides children with opportunities to learn and acquire different experiences, competences, and knowledge in developmentally and individually appropriate ways. Balanced planning should also align with the interests, needs and learning styles of the children. The structure of the curriculum has a major impact on children's performance and well-being, both in the short and long term (e.g., a success in school and as adults).

There are different types of curricula, from unstructured usually known as "laissez faire" to highly structured as a programme led and delivered by an adult. In terms of the role of children and adults in the educational process, there is a continuum of approaches ranging from unstructured, where children play without adult support, to child-initiated play, where adults support for an enabling environment and sensitive interactions, to focused learning which is adult-guided and enables playful experiential activities, to highly structured approaches which are adult directed, with little or no play. The prevailing opinion is that the best outcomes for children's learning occur where most of the activity within a child's day is a mixture of child-initiated play actively supported by adults and focused learning with adults guiding the learning of children through playful and rich experiential activities.

Monitoring the child's progress

Monitoring children aged between 3 to 7 years is different from later stages of education due to how pre-school children learn. They learn by trying or experimenting, experientially, interactively, in concrete situations and through the manipulation of objects and resources with their hands. They touch, test, build and shape objects and resources in many ways. They listen to stories and act them out in everyday roles, tell stories and sing, move and play in different ways in different environments. As a result, close observation of what young children know or can do is the best method of monitoring their learning and development. Early childhood monitoring is also challenging because children's development is rapid, uneven, with varying developmental intensity in different developmental domains, and highly influenced by their environment. The developing child exhibits both periods of rapid growth and periods of 'quiescence' in his/her development.

The development of the pre-school child is most visible in the physical, cognitive, social and emotional domains. However, teachers need to be aware that development does not take place at the same pace and scale in all areas. No two children are the same, and each child has a distinctive or unique level of development in a particular area at a particular time. In addition, it is also important to recognise that children come from different families and have different cultural and experiential backgrounds. This means that when monitoring child's progress, monitoring methods must be adapted accordingly.

When monitoring children and evaluating learning processes, teachers need to ask themselves two important questions:
1. Does the kindergarten/school enable and promote the development and learning of every child or just some?
2. Does the kindergarten/school facilitate and promote different areas of children's development through its approaches, activities and learning environments?

Observation is the most common method of following children's needs, interests and development or learning. Teachers should monitor the different development and learning process of each child. In doing so, data from observations can be used to inform the next planning and implementation of goals, activities, the educational process, educational spaces, materials, and individualization.

In general, two key indicators for monitoring children in kindergarten are **the child's well-being** and **the child's involvement** (Laevers, 2005). Observing the child in the daily interactions in kindergarten should help us to determine the child's level of involvement. The highest level of child's involvement is reflected in the child's alertness, enjoyment of activities and achievements, which are in line with the child's abilities and within the child's zone of proximal development. The information obtained through monitoring later provides the basis for modifying the teaching process and learning environments to improve the child's well-being and involvement. In the context of social learning and dialogic learning (Mercer and Littleton, 2007), in kindergarten, the monitoring process can also be defined as a continuous interaction between the teacher and the child, where it is not only important to observe and see what the child can do on his/her own, but also what the child can do in interaction with others.

Monitoring and evaluation follow key questions:
- Does the child appear comfortable in kindergarten?
- Is the child active, spontaneous, curious, inquisitive in activities?
- How and to what extent does he/she communicate?
- Does the teacher consider the child's prior knowledge?
- Do the activities that take place throughout the day support the development and learning of the individual child?
- How does the teacher support children in their own learning?
- Does the teacher ensure a balance of different types of activities?
- Does the teacher provide sufficient time for children to play freely?

Considering diversity among children

There is a need to respect children's diversity including different cultures, race, ethnicity, religion, special educational needs, etc. in teaching, learning, and developing appropriate knowledge, attitudes and skills by taking such differences into account. Respect for the diversity of children in kindergarten and in school is closely linked to teacher awareness that each child is unique, with individual characteristics and needs, with his/her own family, his/her own circumstances, his/her own experiences and his/her own processes of development and learning.

Teachers show respect for diversity by:
- promoting the strength and value of each child,
- enabling children to learn and play by flexibly choosing different learning approaches,

- providing learning in a variety of learning environments in and out of the classroom,
- embracing personal and cultural diversity,
- respecting each individual and the diversity that goes with that,
- accepting and supporting children's areas of strength and challenge in their learning and development,
- ensuring children's rights,
- accepting and respecting alternative life choices for families,
- promoting social justice, inclusion and equality for all people.

Developing good relationships between the teacher and children

Developing a positive relationship with a child is essential for effective teaching and in fostering their overall development. Building relationships and engaging in meaningful dialogue with children is an ongoing process. It requires patience, active involvement, and continuous efforts to understand and meet each child's unique needs. Investing in the following strategies can contribute to a positive learning environment that supports the overall growth and development of all the children.

Teachers build positive relationships by engaging in meaningful dialogue with children. They should demonstrate sincere interest in the child's thoughts, feelings, and experiences and ask children open-ended questions to encourage them to share and express themselves. It is also very important to pay close attention to what the child is saying. Teachers should maintain eye contact, nod, and provide verbal and non-verbal cues to show that they are actively listening. This helps the child feel valued and understood. Children also need to feel that their teacher is approachable and available. Teachers should be accessible to children both inside and outside the classroom. They need to be open to their questions, concerns, and ideas, create opportunities for one-on-one interactions and make themselves available for individual conversations when needed.

Another major contribution to fostering positive relationships is showing respect and empathy. Teachers should treat each child with respect, kindness, and empathy, no matter what. They should show understanding and acknowledge children's perspectives and feelings, even if they may disagree. This creates a safe and supportive environment for dialogue. They should also create a welcoming environment by setting up a learning space that is inviting and inclusive, where children feel comfortable expressing themselves. Displaying children's work, celebrating their achievements, and creating space within the day for collaboration and open discussions all help to build a sense that children, their views, and feelings are valued.

Children appreciate a stable and consistent environment, which makes the establishment of routines and consistency important. Within a structured and predictable environment, children know what to expect. Consistent routines and clear expectations create a sense of security, which encourages children to engage in dialogue. Teachers also need to use positive reinforcement, acknowledge, and praise the child's efforts and achievements. Providing specific feedback that highlights children's strengths and encourages their growth will help them build their self-esteem and motivation to participate in dialogue. Teachers should also encourage active participation, creating opportunities for all children to actively participate in classroom discussions, group activities, and decision-making processes. It gives children the chance to share their ideas, perspectives, and solutions.

In addition, age-appropriate teaching strategies can promote good relationships. Teaching methods should be tailored to the child's age and developmental stage, and employ a variety of instructional techniques, such as storytelling, hands-on activities, visual aids, and technology, to cater to different learning styles and developmental stages and keep dialogue engaging. Encouraging teamwork, cooperation, and mutual respect amongst children through activities that promote collaboration, such as group projects or problem-solving tasks also helps to create a supportive learning environment. This helps children develop social skills and build relationships with their peers.

Participation in continuing professional development

Continuing professional development (CPD) is essential for teachers to stay current with the latest educational research, teaching methodologies and technologies and best practices, and helps them to improve their own teaching skills and knowledge. It is a lifelong process, and teachers should strive to keep abreast of the latest research, trends, and best practices in their field. This equips them with new strategies and techniques to engage children, differentiate instruction, and promote effective learning. By improving their teaching skills, teachers can provide high-quality education and meet the evolving needs of children.

Education is constantly evolving, influenced by advancements in technology, changes in curriculum, and new pedagogical approaches. CPD enables teachers to adapt to these changes and stay current with the latest developments in their field. It helps them incorporate innovative tools and methods into their teaching, ensuring that children receive relevant and up-to-date knowledge. It also positively impacts on children's outcomes. Teachers who engage in CPD are better equipped to understand and address the diverse needs of their children. They can implement evidence-based strategies, differentiate instruction to cater to individual learning styles, and create inclusive classroom environments. As a result, children are more likely to achieve better academic results and develop critical thinking and problem-solving skills.

There are several ways to do CPD, and teachers should choose the approach that suits their situation best. Different organisations at a national and international level offer professional development workshops for educators. Teachers can attend workshops, conferences, and seminars to learn about the latest teaching techniques, strategies, and technologies. These events provide an opportunity to connect with other educators and share ideas and experiences. Some teachers may prefer to read professional journals to stay up to date on the latest research, trends, and best practices in their field. Many educational institutions and jurisdictions require teachers to engage in CPD to maintain their professional accreditation or teaching licenses. By participating in these activities and meeting the prescribed standards, teachers demonstrate their commitment to professional growth and adherence to ethical and quality standards in education.

Finally, CPD can contribute to a sense of job satisfaction and professional fulfilment. When teachers can enhance their skills, acquire new knowledge, and witness the positive impact of their professional growth on student learning, they experience a sense of accomplishment and purpose. This, in turn, can lead to increased job satisfaction, teacher motivation, and retention in the education profession.

In summary, CPD for teachers is vital for improving teaching skills, staying current with educational advancements, enhancing children's outcomes, promoting reflective practice, building professional networks, meeting standards and requirements, and fostering job satisfaction. By investing in it, educational institutions and policymakers can support the growth and development of teachers, ultimately benefiting children and the overall quality of education.

Conclusion

The role of the teacher in these early years is to support children's development by building on their current competencies. This relies on awareness of their interests and needs and quality relationships and interactions between the adult and children. Observation in outdoor spaces often places less pressure on the child to perform and can give insights into strengths and areas to work on (Waite, Rutter, Fowle & Edwards-Jones, 2015). Being outside the classroom changes the dynamics between the teacher and children and can strengthen positive relationships. It may reduce the tendency to see the teacher as expecting certain 'right' answers and open up conversations (Hackett et al., 2021). Sustained shared thinking (Siraj-Blatchford 2009, p1) has much in common with Vygotsky's (1978) "zone of proximal development" where a more experienced other (adult or child) supports children's learning beyond what they would currently be capable of on their own. Such extension of learning through contingent support is sometimes known as "scaffolding" (Wood, Bruner & Ross, 1976) or "interthinking" (Mercer 2000). "Dialogic teaching" (Alexander, 2004), "dialogic enquiry" (Wells, 1999), and "mutualist and dialectical pedagogy" (Bruner, 1996, p. 57) are all examples of language stimulating

strategies in which sensitive balanced interchange of questions and speculation between teacher and child stretch thinking and language capabilities of children. This pedagogical approach can happen in any environment, but we suggest that outdoor environments support a broad range of positive wellbeing and learning opportunities that encourage this approach.

Review of existing literature about early language development in nature

Ellen Almers

Part 1 of the theoretical handbook concludes with a review of the limited research that has specifically combined early language development and the natural environment.

What empirical findings about possible impacts of natural outdoor environments on early language development are there? To investigate that question, **a systematic review of contemporary research was undertaken** (Richardson et al., 2023). The search included studies of three- to seven-year-olds published between 01/01/2000 to 31/12/21. Studies on acquisition of a second language, special education needs, or home learning environments were excluded. The most significant result of this review was that there have been very few peer-reviewed empirical studies published about how children's language is developed within natural environments. Out of 181 papers found through keywords in abstracts and titles, only twelve were finally identified as relevant and robust enough to be included in the review. These studies varied significantly in theoretical approaches, aims and results. Eight of the twelve studies mentioned language development as a by-product. Only three papers focused on language development *per se* set out to explore the impact of nature on language development in children directly (Richardson, 2014; Richardson and Murray, 2017; Hackett et al., 2021, while one (Norling and Sandberg, 2015) offered adults' perspectives of the effect of natural outdoor environments on language.

Despite the differences among the studies, they all gave support to the conclusion that **natural environments can have a positive influence on language development by promoting the desire to communicate, developing communication skills and through enhancing literacy skills.**

Desire to communicate

One of the most frequent explanations for natural environments being supportive for early language development is that they can provide increased motivation for children to communicate. Six papers concluded that desire and motivation to speak could be enhanced within a natural environment. The motivating impact of being in natural environments was explained by the presence of fewer boundaries (literal and metaphorical) and children's deeper involvement in open-ended play, greater excitement and enjoyment, better opportunities to experience activities

in smaller groups, encouraging social interaction rather than passive learning and enhanced sensory learning (Richardson & Murray, 2017). The dominance of adults tends to decrease within natural environments where the pressure of formal education goals is often less compared with the indoor classroom setting. The decreased pressure on performance can stimulate children, who are silent in formal settings, to speak (Hackett et al., 2021). In combination with curiosity and authentic reasons for communication offered by circumstances in the natural environment, children experience a need to speak and engage in dialogue and were therefore motivated to expand their vocabulary (Canning, 2013; Moffatt, 2016). Natural environments do not just provide excitement, awe, and wonder, but also peace and quiet and often less background noise. In addition, children are not constrained by indoor classroom regulations to be silent but are free to experiment with their voice in a variety of ways (Flannigan and Dietze, 2017). Norling and Sandberg (2015) however, also pinpoint the importance of adults not to be too far away and too passive to be able to support language learning outdoors. Once children have been motivated to speak by experiencing freedom and less pressure to perform, the adults need to be there to support the children's communication skills.

Communication skills

Ten out of 12 papers found the natural environment to be beneficial to communication skills such as the ability to pay attention, to listen, to make speech sounds and communicate with others. Eight papers also reported increased vocabulary due to exposure to new context-specific words and experiences. Exclamations, usage of verbs and lexical diversity were found to be stimulated in natural environments (Richardson, 2014; Richardson & Murray, 2017). Increased vocabulary in turn enhances ability to share their learning (Streelasky, 2019), emotions (Miller, 2007), experiences (Moffatt, 2016), further expanding vocabulary and language use. Social communication skills were improved among 80 % of children in Richardson's study (2017) presumably due to experiences offered by a forest school environment but also due to adults' supportive interaction. As suggested by French (2004) and McVittie (2018), vocabulary is best learnt through children's active participation in hands-on-activities with social interaction with peers and adults.

Literacy skills

A less frequently mentioned, although important theme among the findings was literacy skills, such as naming, spelling, reading, and telling stories. The natural environment has a positive influence on these skills because children are allowed to communicate what they know in a very different way than in the indoor classroom (Miller, 2007). The use of storytelling and rhymes in natural environments can prompt imagination and enhance communication and language development (Canning, 2013; Hackett et al., 2021). Also, hands-on science activities in nature have

been found to stimulate curiosity and be a positive influence on language develop-
ment (Bucholz and Pyles, 2018; French, 2004; Moffatt, 2016).

Part 2

The evaluation

Sue Waite, Per Askerlund

In Part 2, we report on the evaluative research which was conducted by the ELaDiNa team to explore the success of the project and refine our understanding of some of the links between early language development aspects and natural environment features.

Background to the evaluation

The theoretical and methodological context for the evaluation of the project is set out below.

Our aims as an evaluation of process and impact

A principal intention in the ELaDiNa project was that we would integrate evaluation with the process of development of a generic model of early language development in nature through iterations of research and practice, providing formative feedback at key points in the process so that the findings could help to shape practice in the participating settings and inform the development of our generic model. In this way, our evaluation could provide an important vehicle for teachers' professional development through supported reflection on their own and others' practice rather than simply represent a summative assessment of the success of the project at its conclusion.

Sims et al (2022: 31) suggest that the following actions promote successful professional development:

Instil insight (I)
- Manage cognitive load
- Revisit prior learning

Motivate goals (G)
- Goal setting
- Credible source
- Praise/reinforce

Teach techniques (T)
- Instruction
- Practical social support
- Modelling
- Feedback
- Rehearsal

Embed practice (P)
- Prompts/cues
- Action planning
- Self-monitoring
- Context-specific repetition

Accordingly, parts of the evaluation also appear in the Training Programme for future professional development in language development in nature. The project

design also included iterations of this as part of the cycles of action research for successful continuing professional development advocated in the section on the role of the teacher.
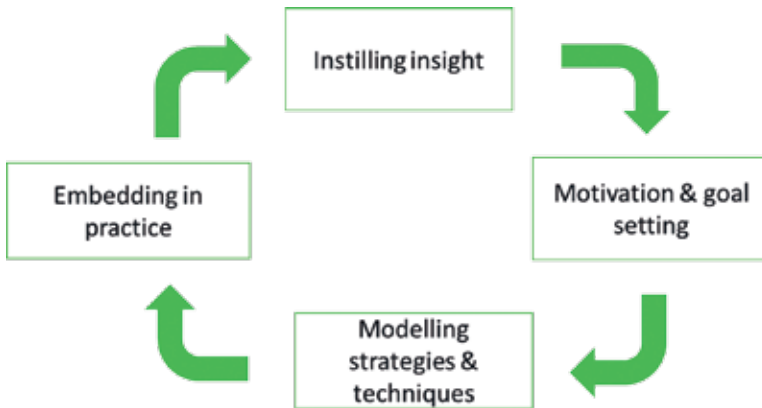
Figure 5: The iterative cycle of CPD (based on Sims et al., 2022)

Theoretical framework for the evaluation

The overarching theoretical framework that we proposed in our application followed the dimensions of Purpose, Place, Pedagogy and People (O'Brien et al., 2016; Malone and Waite, 2016; 23).

Purpose refers to teachers' intentions and desired outcomes from activities. Our definition of Pedagogy differs from that of Siraj-Blatchford's 'processes and *provisions* that could be considered to initiate or maintain learning processes, and to achieve educational goals. ...includ(ing) the common practice of providing resources for exploration and (constructivist) "discovery" learning environments (e.g., sand and water play)' (2009, p. 2, *our italics*) in that Place for us includes *provisions*, the material affordances arising from natural environments, both planned and incidental. People refers to the roles of the people involved, the adults and children and the nature of their interactions. These are key aspects of practice that should be considered in outdoor learning.

Our research questions were:

PURPOSE
RQ1: What were teachers trying to achieve in early language development in nature?
RQ2: Were teachers more thoughtful and/or targeted about their practice in early language development in nature after participation in the project?

PEDAGOGY
RQ1: How did teachers support early language development?
RQ2: Were there changes in pedagogical language stimulating strategies during the course of the project?

PEOPLE
RQ1: What roles did adults and children play in language exchanges in natural environments?
RQ2: Did these roles change during the course of the project?

PLACE
RQ1: What views did teachers have about the value of nature for language development?
RQ2: Were teachers sensitive to the opportunities presented by the natural environment for language development aims, both general and specific?

Methodology

The project was founded on a pilot project of language development in nature carried out by one of the partners bsj Marburg, Germany. As Sims et al. (2022) systematic review of effective teacher professional development suggests, we considered that ELaDiNa should incorporate 1) Instilling Insight (I), Motivating Goals (G), Developing Techniques (T) and opportunities for Embedding Practice (P). With training event input alone, there was a risk of a gap between knowing and doing and without theoretical insight about techniques, there was a risk of reverting to established habits and/or misapplication of techniques. We therefore believed a socio constructivist approach would be most appropriate to test and develop the initial findings from the pilot study towards a generic model. Our evaluation focused on teachers; their practices to support early language development in nature and their perspectives about what aspects of practice in nature-based outdoor learning environments supported children's progress in language development between the ages of three and seven.

We used mixed methods with an emphasis on qualitative data to elicit rich narrative detail of teachers' views and practice. We also coded and counted incidences to explore how prevalent certain practices and views were as this seemed helpful and important in developing a generic model that might be more widely applicable and useful.

Ethical considerations

Partners in each country recruited settings at kindergarten/preschool and primary level that worked with children of these ages and at least two members of staff from each were involved. Partners, settings, staff, and parents received an ethics

protocol with a consent form, which teachers and parents of the children that attended these settings completed to indicate informed consent. They were given details of what their participation in the ELaDiNa project would entail and advised that they could withdraw at any time without penalty. Teachers were regarded as associate partners in the project given their substantial contribution.

We would have liked to monitor the progress of individual children experiencing the innovations introduced through participation in the project, but this was not possible because the time period of the project meant that children moved classes before its latter stage. It was also considered sensible and reasonable to use teachers' assessments of the project's value for their children's language development since their professional development in this field was the focus of the project. Some information about perceived progress of children through language development in nature was gathered in the post intervention questionnaire.

Although children themselves were not the focus of our research, they were obviously visible in the video recordings of teachers' practice that would form an essential part of the process, so parents were given the opportunity to ask that their children were not included in these videos.

Participants

The numbers of settings (and teachers) participating can be seen by education levels within each partner country in Table 6. Starting age for school is age of 6 in Germany, 6 in Sweden and 6 in Slovenia.

Table 6: Number of settings and (associate partners) from each country.

Education level	Germany	Slovenia	Sweden
Kindergarten/preschool (KG)	4 (5)	2 (4)	2 (4)
Primary school	3 (5)	4 (8)	1 (2)
After school care	1 (1)		
Outdoor centre (Primary school)		1 (2)	

(N.B. one German primary is a special school for 6 – 14 years old)

For convenience, KG is used in this handbook to refer to both preschools and kindergartens for the younger age group.

Indicators of success

There were several key information sources that would indicate the project's success. These are detailed in the table below.

Table 7: Key indicators for evaluating and informing our project's success.

ASPECTS OF ELADINA	Data source	Information about	How?
PROJECT AIMS & OUTCOMES	Project partner staff	Cross-cultural commonalities and differences	Focus group
		Fidelity of implementation to project aims	
		Project successes and challenges	
BELIEFS within & across countries	KG/school staff	Differences and similarities in opinions and reported practice amongst settings & across time	Questionnaires sent to setting staff on two occasions (response rate: 30 at baseline, 18 post, 15 where before and after both completed).
		Key emergent themes	
PRACTICE within & across countries	KG/school staff	Effective & age-appropriate pedagogies	Video clips (96 received). Reflective commentaries 12 Maps with photos and annotation Outdoor Learning Environment questionnaires
		Specific outdoor learning environment features and language outcomes	
		Cross-cultural commonalities and differences	
TRAINING within & across countries	KG/school staff	Comments	40 evaluation sheets from teachers
		Improvement suggestions	
		Satisfaction levels in evaluation forms	

Evaluation timeline

To inform the developmental process within the project, we planned a staged series of data collection and feedback points to cover the different information needs shown above. Table 8 below shows the evaluation plan as a timeline with associated dates for data collection and analysis periods. Some slippages due to the COVID-19 pandemic occurred because of restrictions, but our principal data collection aims were achieved.

Table 8: ELaDiNa project evaluation timeline

EVALUATION PLAN		
BASELINE DATASET		
Ethics protocol	Setting staff with partners	Oct 20 - Apr 21
Baseline questionnaire about knowledge of language, language acquisition and promotion	Setting staff with partners	Mar/Apr 21
Annotated map of learning environment with photos	Setting staff with partners	Jun 21
Videos of practice	Setting staff	Apr-Jun 21
Reflective commentaries on initial video w. prompts based on own language use, context etc	Setting staff	Apr-Jun 21
Video clips, commentaries &maps to Jonkoping team	partners	Jun 21
Analysis and feedback	Research team	Jul 21-Dec 21
TRAINING IN GERMANY		Sep 21
Evaluation sheets for training & comments	Setting staff	Sep 21
Analysis and feedback	Research team	Sep-Oct 21
PRACTICE DATASETS		
Videos	Setting staff	Mar-Jun 22
Reflective commentaries	Setting staff with partners	Mar-Jun22
Video clips & commentaries to Jonkoping team	partners	Jun 2022
Analysis and feedback	Research team	Sep 22-Jan 23

OLE online questionnaire	Settings	Jun 22
Analysis and feedback	Research team	Sep -Dec 22
TRAINING IN SWEDEN		Sep-22
Evaluation sheets for training and comments	Setting staff	Sep 22
Analysis and feedback	Research team	Oct 22
PRACTICE DATASETS		
Final set of videos (optional)	Setting staff	Mar 23
Reflective commentaries and suggestions for inclusion in handbook	Setting staff with partners	Mar 23
Video clips & commentaries to Jonkoping team	partners	Apr 23
Analysis for final report	Research team	May 23
Analysis	Research team	Apr 23
EVALUATION MEETING IN SWEDEN		Mar-23
Presentation on evaluation findings overview	Research team	
Focus group	Partners	Mar 23
Analyses	Research team	May 23
POST INTERVENTION DATASET		Apr-23
Online questionnaire to teachers (based on pre-intervention questionnaire)	Setting staff	Apr-23
Collation of all data for theoretical handbook	Research team	Apr – Jun 23

Data analysis

Data from the different sources were analysed using coding frameworks developed by two members of the Jönköping team and any coding uncertainties or disagreements were reconciled through discussion to validate results. The analytical frameworks themselves were designed dialogically with reference to existing literature, tools and early versions of the generic model to try to capture the most significant aspects relevant to early language development in nature.

Further validation for the analytical approach was also obtained by providing interim feedback reports which were discussed by partners and associate partners at each stage of the project. We used the theoretical framework of Purpose, Place, Pedagogy and People (O'Brien et al., 2016; Malone and Waite, 2016; 23) to structure our data collection tools and findings.

The context of the settings

In the following sections, we report on our analyses, starting with **descriptions of the 16 settings that took part in the project.**

Table 9: Short descriptions of the settings of our associated partners

Setting names	Description	Age phase
Germany		
Städtische Kindertagesstätte Schröck	Public daycare centre in rural setting with own vegetable/farmer garden and near accessibility to field and forest	KG
Waldkindergarten Marburg	Forest kindergarden located at the edge of the forest	KG
Kindertagesstätte "Weißer Stein" Stadtallendorf	Public inclusive daycare centre in an urban industrial setting with well-established project weeks in the forest being 4 weeks the entire day out in the woods	KG
Anneliese Pohl Kindertagesstätte	Public daycare centre for employees of the university and the hospital located directly on the hospital ground in the forest and with one forest group	KG
Bildungsstätte am Richtsberg	Public after school childcare in an urban setting located in the woodland greenbelt of the city	After school care
Grundschule Wohra	Public primary school in a rural setting with access to the woods within walking distance	Primary school
Regenbogenschule Ebsdorf-Leidenhofen	Public primary school in a rural setting with an own piece of woodland, the so called "children's forest"	Primary school
Slovenia		
Vrtec pri OŠ Voličina	Public KG in rural setting with near accessibility to park and forest	KG
Vrtec Galjevica	Public KG in suburban setting with near accessibility to park and forest	KG

Setting names	Description	Age phase
OŠ dr. Janeza Mencingerja Bohinjska Bistrica	Public KG in rural setting with near accessibility to park and forest	Primary school
OŠ Slivnica pri Celju	Public primary school in rural setting with near accessibility to park and forest	Primary school
OŠ Litija	Public primary school in suburban setting with near accessibility to park and forest	Primary school
OŠ Miklavž na Dravskem polju	Public primary school in suburban setting with near accessibility to park and forest	Primary school
CŠOD	Public outdoor centre in rural setting with near accessibility to park and forest	Outdoor centre
Sweden		
HallonEtt AB, Jönköping	Private preschool in urban setting with near accessibility to park and lake	preschool
Förskolan Pärlugglan, Jönköping	Public preschool in suburban setting with near accessibility to park and forest	preschool
Råslättsskolan, Jönköping	Public primary school in suburban setting with near accessibility to park and forest	primary school

All settings were asked at the start of the project to provide an annotated map of their outdoor learning environment (OLE) so that we could visualise what these looked like and begin to explore how they were used by staff before any input from the project. Another developmental purpose of asking staff to create a map was to begin to stimulate their thinking about links between the physical characteristics of nature in the OLE and language development.

The guidance that we gave was:

1. Draw a map of your usual outdoor learning/play environment(s) on large paper (A3 format minimum). This might be the school grounds or an area away from school. Please include distance from school. As a template, use either a map of the school grounds (if available), or make use of Google Maps to sketch one. Include a legend to give a simple description of the physical properties of the space (materials, resources, and landscape available) and dimensions of scale.

2. Take photos of those places outdoors (included in the map) where children spend time by themselves or in company with other children or teachers. There is no need to include children in the photos. Make one small print (approx. 10 x 10 cm) of each place/location.

3. Write a short text to accompany each of the photos describing the physical properties of that location (e.g., trees, bushes, rocks, mud, water, pits), what activities usually takes place there, and which are most popular for interactions and language use by children. Rate the photos in order of the most used with number 1 being the most used.

4. Pin the photos with descriptions around the map. Place a pin that corresponds to the place of the photo on the map. Connect the two pins with coloured yarn. Or link the photos and maps as you wish.

Figure 6 shows one of the maps shared by a Swedish preschool (HallonEtt). Although there is no explanatory text, the staff have used photos to show the sorts of stimulation for language use that they find in these spaces.

Figure 6: Annotated map of OLE at a preschool in Sweden.

The following example (Figure 7) shows a school's (Slivnica) OLE in Slovenia, where forest, meadow and playground are identified and in some cases the way they are used is explained.
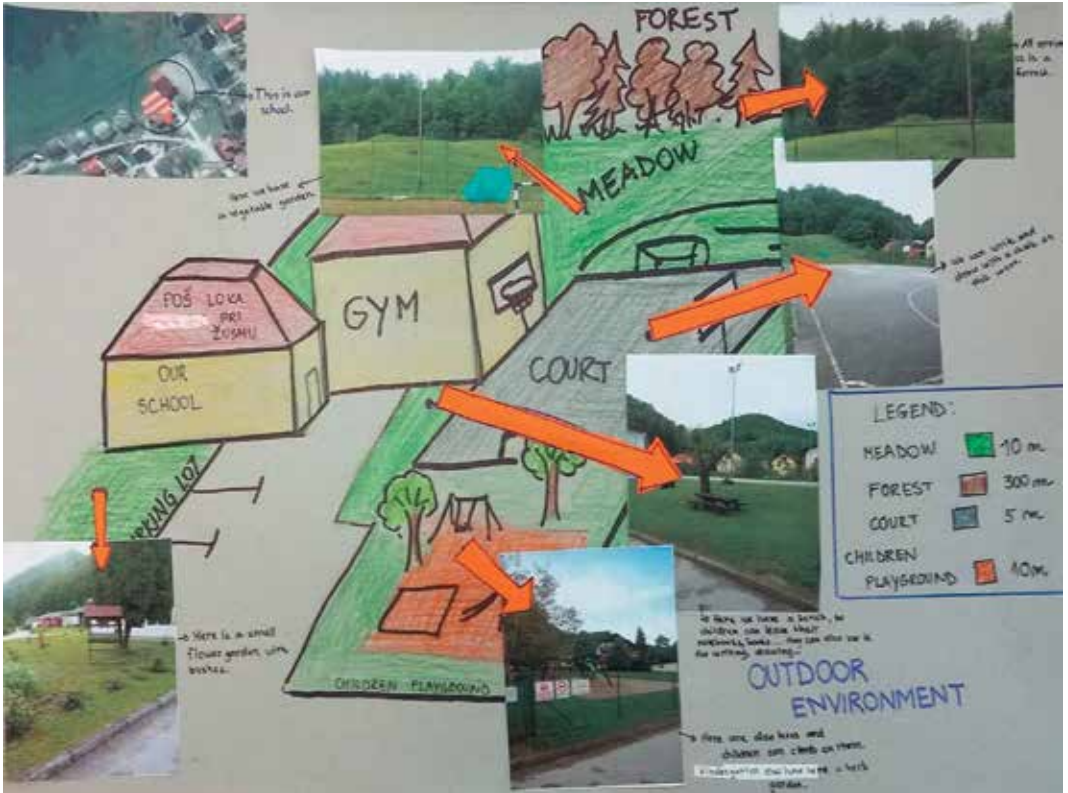
Figure 7: Annotated map of an OLE at a school in Slovenia.

The map that follows is from a preschool in Marburg where forest settings characterise the outdoor learning environment (Figure 8). Short captions give clues of where different activities take place.

Figure 8: Annotated map of an OLE at a kindergarten in Germany.

ELaDiNa participants' beliefs and self-reported practice

We now turn to report on teachers' beliefs and self-reported practices before and after participation in the project. This relates to teachers' intentions and PURPOSES.

Early in the project before the first training in Marburg, Germany had taken place, **teachers were asked to complete an online questionnaire with demographic information and details about their beliefs and practices.** This format was then **repeated towards the end of the project after the two sets of training and feedback about videos and their use of their OLE to explore if there were any shifts in their thinking and self-reported practice over this period** (see appendix for a copy of the questionnaire).

The results that follow compare data from the baseline questionnaire handed out early in the project (April 2021) with the questionnaire at the end of the project (April 2023). Unfortunately, only 18 participants chose to fill in the survey on the second occasion. To be able to make a valid comparison between the baseline and final surveys, only those 15 respondents that answered both surveys have been included below. This turned out to be five from each country. Teachers with only 1-5 years in teaching are overrepresented among those who did not answer the final survey: only one person in this category chose to answer the final survey compared to eight in the baseline survey. The reason for this is unclear, but one possibility is that the less experienced teachers felt busier towards the end of the project and therefore did not find time to respond.

Demographic information

All participants (30) finished the baseline online questionnaire during the spring 2021. As can be seen from Figure 9, the number of years in teaching varied considerably among the participants, from a few years to more than 20 years.
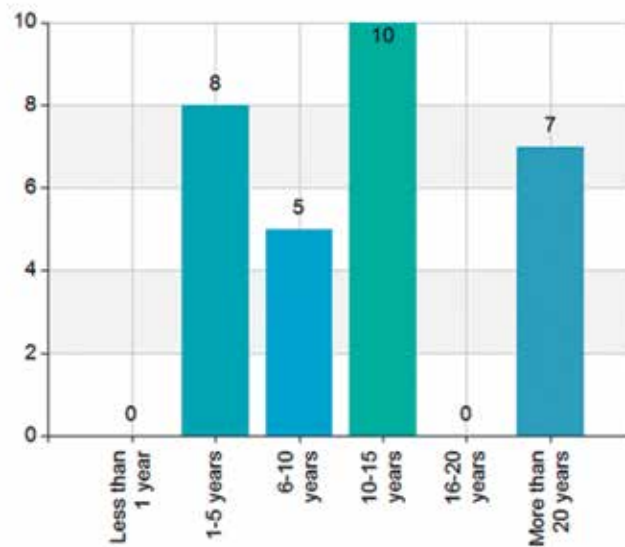
Figure 9: Years in teaching among participants (in numbers) reported early in the project.

Figure 10 shows what ages of children the participants were teaching early in the project. Here, it was possible to choose more than one age group which is why numbers in Figure 10 represents the number of answers rather than the number of respondents.
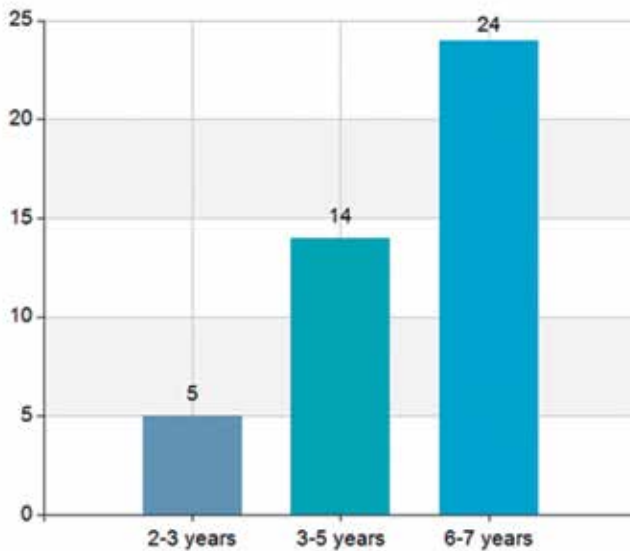
*Figure 10: Ages of children that participants were teaching early in the project.
(It was possible to choose more than one age group, so numbers do not
match the number of respondents).*

Beliefs about nature and language development before and after participation

When asked about their **interest or involvement in nature**, the vast majority (25 respondents) answered that they were very interested/involved, and the remaining 5 respondents said they had a moderate interest or involvement in nature. Similarly, a large majority of the respondents (23) said they were very interested in language development (7 said they were moderately interested).

Participants were asked if they believed **being outdoors contributes to children's language development.** Already early in the project more than two thirds of the respondents (11 out of 15) answered that they very much thought this was the case. The remaining four respondents said they believed being outdoors had a moderate effect on language development. Essentially similar results were obtained at the end of the project, with 10 respondents answering "Very much", four "Moderately", and a single person answering "Slightly". The participants were also asked to explain why they thought being outdoors does (or doesn't) contribute to language development. Typical comments from early in the project were:

> *"Definitely. Nature motivates children to explore, children ask questions, describe, explain phenomena, get to know them with all their senses. Natural materials develop the child's imagination and encourage play."*

"In order to develop the language, you need something that is interesting enough to talk about (there is that in nature, but also in other places). But a good conversation also requires someone who is interested in and has time to listen."

"I think it does. Outside children are much more active than they are in- side. They ask questions that appear during their playing and they actu- ally don't know they're learning."

A few answers to the same question when asked during the end of the project:

"With the experience of 2 years in ELaDiNa, I'm convinced that being out- doors contributes a lot to language learning."

"I strongly feel that there is a connection between body and mind that in the outdoor environment can be very good for language development."

"Yes. When we were outside, the children were more relaxed, and they re- ally talked all the time. They observe, comment, and ask questions. They open themselves."

The next question that was asked was if the **location and/or the qualities of the out- door environment are important to children's language development** (Figure 11).
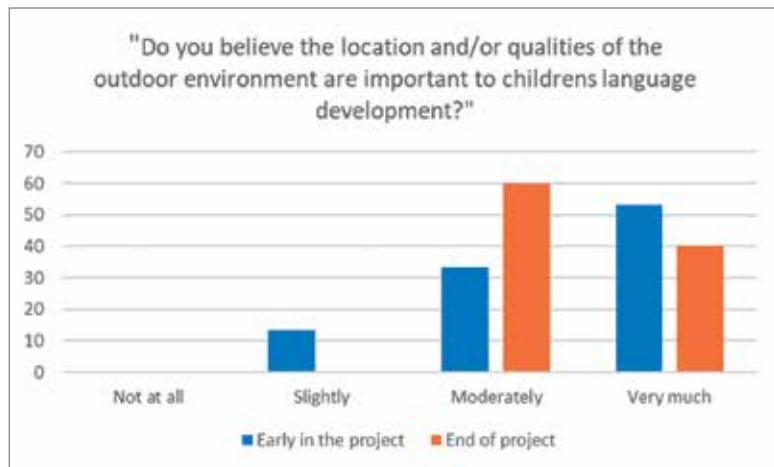
Figure 11: Participants' answers to the question "Do you believe the location and/or qualities of the outdoor environment are important to children's language development?", asked early and towards the end of the project (numbers on the Y-axis show the percentage of respondents).

We can see here that there was a belief that the location or the qualities of the out- door environment were important, and that this belief was strengthened some- what during the course of the project.

A few comments in connection to this question from respondents early in the project:

> "What is beautiful and fine attracts the joy of discovery. Being able to move freely in the forest and smell, see and feel evokes a feeling to share and tell about what we see. The unfinished stimulates the imagination."

> "Yes. Different natural environments encourage children to engage in a variety of activities that enrich vocabulary and language at the same time."

> "I don't think location is that important. For example, just looking at the sky allows us to talk about colours, clouds, shapes, weather …"

… and from towards the end of the project:

> "I think children can play, interact, build and discover also in an inner-city park. It is more important that there are adults who trust them and give them time and space to find hidden spaces. "

> "Children are able to learn about the diversity of nature and the outdoor world. Even a place in a city with little nature left, can give many possibilities for children to develop their language, as long as they have other children to communicate with and explore their outdoor environment."

> "Any outdoor setting is helpful. I think that pure nature has the highest impact because there is more to explore."
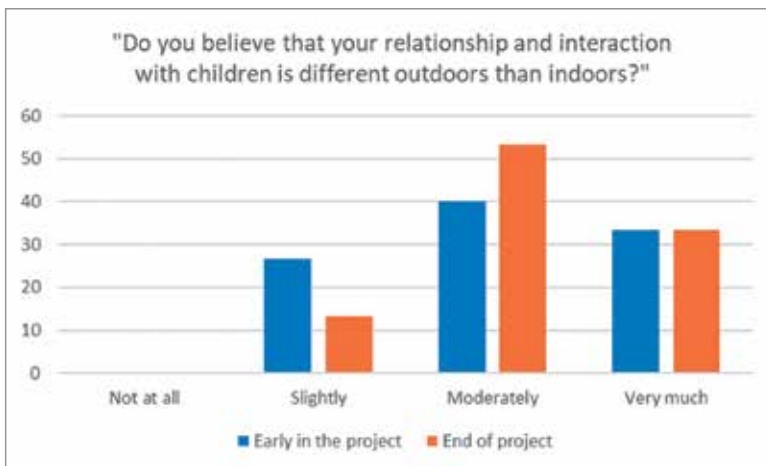
Figure 12: *Participants' answers to the question "Do you believe that your relationship and interaction with children is different outdoors than indoors?", asked early and towards the end of the project* (numbers on the Y-axis show the percentage of respondents).

There is a tendency that after having participated in the project more respondents believe their **relationship and interaction with children differs between the outdoors and indoors**. (Figure 12). Here follows a few comments from the end of the project:

> *"Outdoors I experience more situations with a small number of children. I can listen more and can talk confidently and individually. I also tend to go where the children lead me and discover with them and sometimes explain."*

> *"In nature, we experience many things and situations together. I do not know beforehand exactly what we will see, hear, or what we will talk about, too. In the classroom, much more is dictated by me. We are closer together in nature and at the same time each has more space."*

> *"I think that the students are more active outside. They want to show me things, they talk more and we are more equal in balance in our roles when we explore things together."*

> *"Teachers and children can be more calm, relax outside. Children always have something to do, they are not bored. There are more opportunities to empower those children that have some difficulties."*
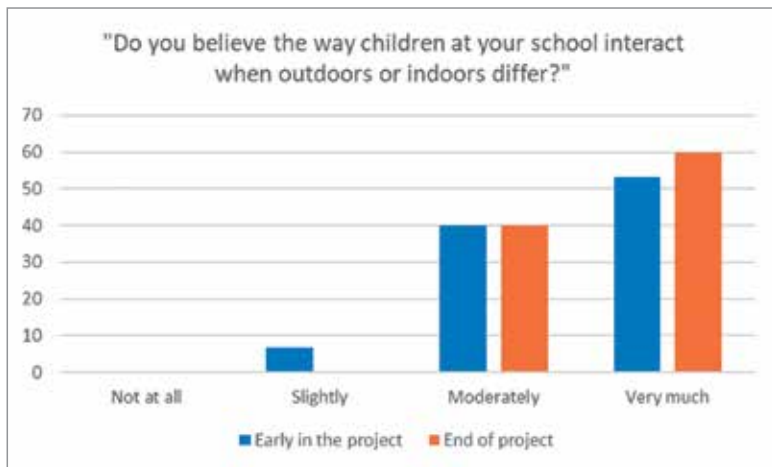
Figure 13: *Participants' answers to the question "Do you believe the way children at your school interact when outdoors or indoors differs?", asked early and towards the end of the project* (numbers on the Y-axis show the percentage of respondents).

There was a strong belief already at the start of the project that **interaction between children differs between indoor and outdoor environments,** and data sug-

gest this view may have been reinforced (Figure 13). Several of the respondents comment that children are calmer outdoors and that there are fewer conflicts:

> *"There are much less conflicts because of the space and possibility to be in motion. Children can be seen from others in a different way, because they can show different behaviour or abilities when outdoors."*

> *"When dealing outside, there are often fewer conflicts. It is less stressful for the children. Forest, meadows and fresh air are calming for the children. The cooperation is better and this allows more communication."*

Figure 14: Participants' answers to the question "Do you believe that some children's language development is more inclined to benefit from an outdoor environment than others?", asked early and towards the end of the project (numbers on the Y-axis show the percentage of respondents).

There was moderate belief that **some children are more inclined to benefit from an outdoor environment**, and this view did not seem to change over the course of the project (Figure 14).

> *"We´ve experienced shy and withdrawn children start talking freely in a natural environment."*

> *"I´m not sure if there are students that have more gain in language development than others when they are outside. There are students that feel insecure and frightened being for example in the woods and it´s not good for their development."*
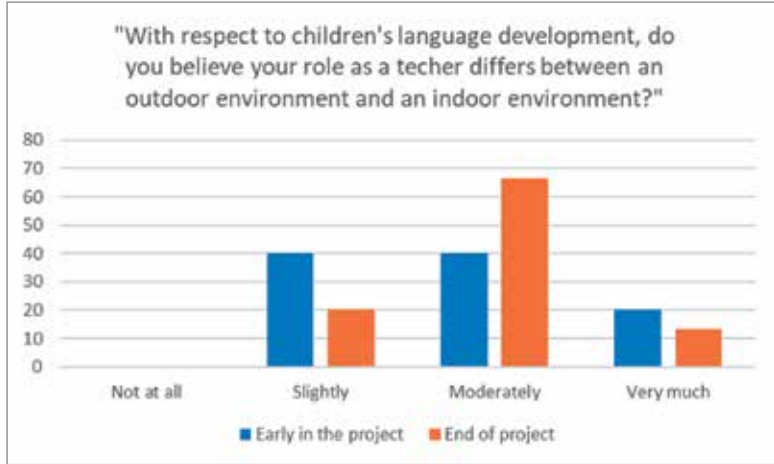
Figure 15: Participants' answers to the question "With respect to children's language development, do you believe your role as a teacher differs between an outdoor environment and an indoor environment?", asked early and towards the end of the project (numbers on the Y-axis show the percentage of respondents).

The results indicate that towards the end of the project a larger proportion of the respondents think that the **teacher's role differs between the outdoor and indoor environments** (Figure 15). Here are a few answers from the end of the project:

> *"Indoors I'm more of a teacher, leader, outdoors I'm guided by the children and their ideas and interests. I help them to connect to nature and to understand by explaining, not by reciting."*

> *"I think my role is basically the same both indoors and outdoors. However, being outdoors seems to me a bit more partner-like and cooperative."*

> *"In nature, we have conversations more at eye level with the children. The children recognize genuine interest. They feel more self-confidence and also have more linguistic confidence. The teacher can make good use of this to further promote language development."*

> *"I don't think my role as a teacher change in an outdoor environment versus an indoor environment. My way of looking at learning is the same inside as outside. As nature is always changing, there is always something new to discover together with the children without me as an educator needing to change it. The changes of the seasons, different weather, different events, encounters with animals and natural materials. In the indoor environment, the educator must create a change in the environment and materials if a change is to take place."*

Practice before and after ELaDiNa training and project involvement

Figures 16 – 19 compare the total **time spent with children outdoors during different seasons** early and at the end of the project, as stated by the participants.
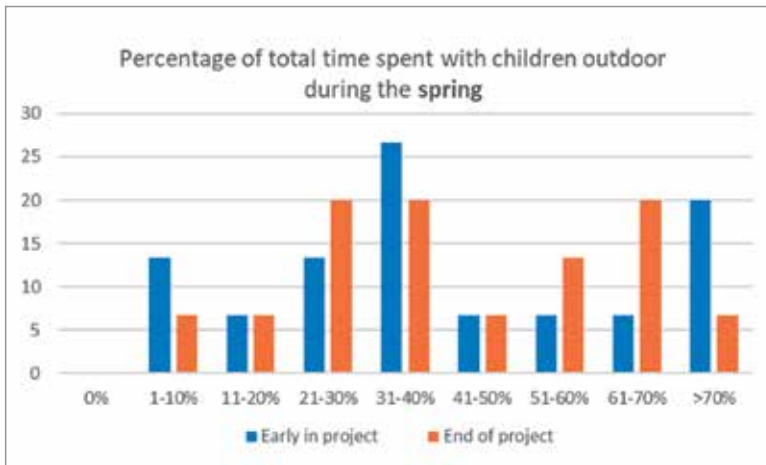
Figure 16: *Percentage of total time spent with children outdoors during the spring early and at the end of the project as stated by participants* (numbers on the Y-axis show the percentage of respondents).
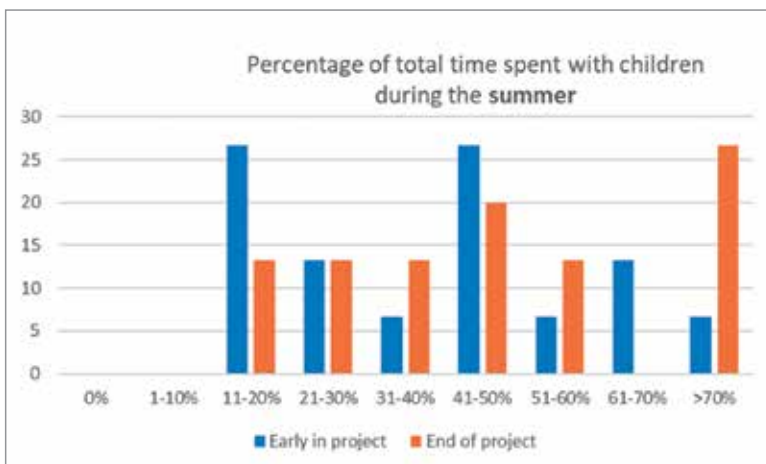
Figure 17: *Percentage of total time spent with children outdoors during the summer early and at the end of the project as stated by participants* (numbers on the Y-axis show the percentage of respondents).
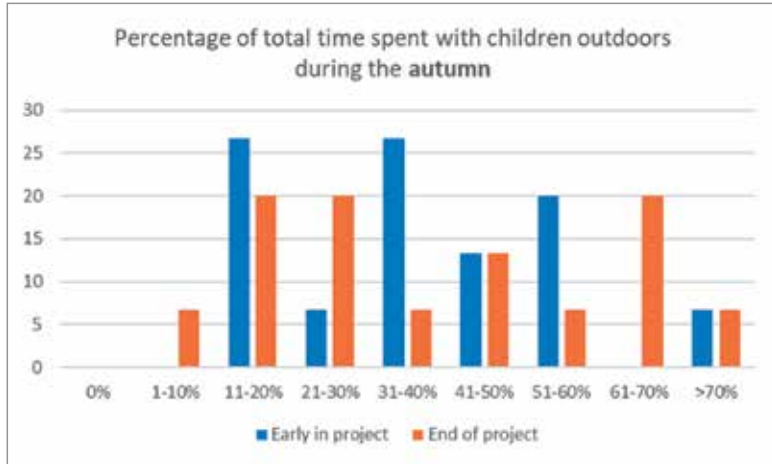
Figure 18: Percentage of total time spent with children outdoors during the autumn early and at the end of the project as stated by participants (numbers on the Y-axis show the percentage of respondents).
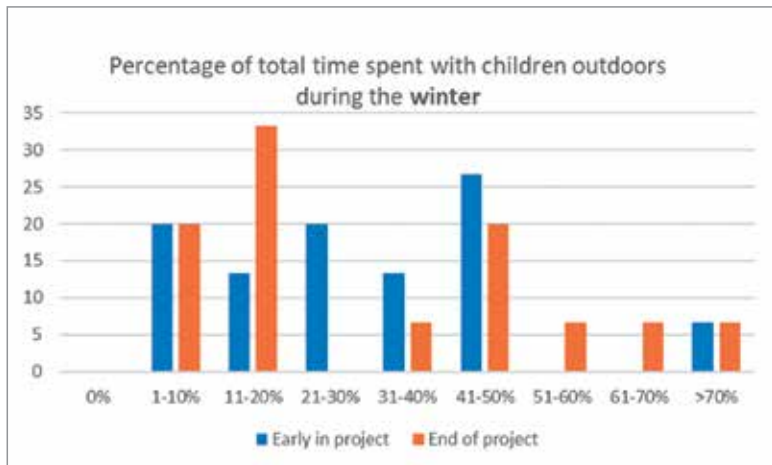
Figure 19: Percentage of total time spent with children outdoors during the winter early and at the end of the project as stated by participants (numbers on the Y-axis show the percentage of respondents).

The data clearly show that participants estimate that they spend more time outdoors with the children during the summer months, and less time during the winter (Figs. 16 – 19). While it is not possible to see any significant change in time spent outdoors between the early and late stage of the project, there is some indication that more time is spent outdoors during the autumn and winter months towards the end of the project. Weather conditions within seasons may also have varied

between years and blurred the differences between the early and later answers somewhat.

A majority of the respondents would use the **same pedagogy to develop children's language outdoors as indoors** "some of the time" both early and late in the project. As the project neared its end, one out of 15 teachers said he/she would never use the same pedagogy outdoors as indoors. Three respondents said they would use the same pedagogy "all the time" both at the start and at the end of the project (Figure 20).
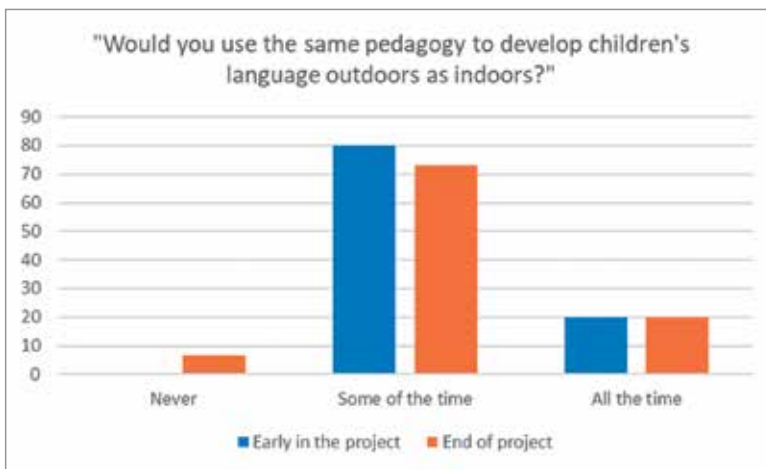
Figure 20: Participants' answers to the question "Would you use the same pedagogy to develop children's language outdoors as indoors?", asked early and towards the end of the project (numbers on the Y-axis show the percentage of respondents).

Here follows a few examples how these answers were motivated during the early stages of the project:

> *"I always do! We take the experiences the children acquire outdoors with us indoors. Through pictures and perhaps nature's wonderful objects, we reflect together with the children. We take what we experience out in nature into creative activities such as drawing, painting, clay and construction."*

> *"Certain activities are impossible to do in the classroom. Some outdoor activities we try to do indoors (if the weather is really bad), but the result is never the same if we do it outdoors."*

> *"I use most of the time similar pedagogy outdoors as indoors e.g., language-supporting interaction strategies that are integrated into everyday life."*

And a few comments at the end of the project:

> *"I think that most things we do inside we can do outside. But some things (mostly) only occur outside, like rain, wind, snow etc. We have to take advantage of that."*

> *"Teaching in the classroom is more teacher-driven and action orientation must always be arranged. In nature, I can often use what nature offers me."*

> *"Mostly it's the same pedagogy. The biggest difference is that there are more distractions outside (weather, insects, sounds and all the unexpected things that happen) compared to inside. Inside we write words and phrases more than outside to support language development."*

Figure 21:   Participants' answers to the question "Has your practice in supporting language development changed as a result of taking part in the ELaDiNa project?", asked at the end of the project (numbers on the Y-axis show the percentage of respondents).

It is clear from the data that all the participants feel that **the project has had an impact on their practice** (Figure 21, all 18 respondents are included). A few responses to this question follow:

> *"I´m more sensitive to situations where I should rather listen, observe and wait instead of reciting and explaining."*

> *"In the course of my ELaDiNa participation, I have become more aware of my own and the children´s language. I ask more conscious open-ended questions, I listen more carefully, I tell stories (even) more often, I try not to answer a question immediately but to involve the children in finding the*

answer. With children who cannot (yet) speak well or who are only just learning our language, I consciously and frequently repeat words and also support them with gestures or pointing to the object in question."

"I focus more on what words it is that I want the children to learn. I try to understand more about how language develops when you're young and what it is that makes the development sometimes look different. I still think that giving children a lot of different experiences and different ways to express themselves is a really important part of language development."

"At school, our focus was on the acquisition of written language. After the project, I am very aware that the children are still in the middle of development in spoken language. It is absolutely our task to make the right offers for development here as well. Nature helps us a lot."

"I have worked for a long time and have always been outside a lot, but the project gave me many new ideas to practise with my students."

"Our overall pedagogy, its practices and views, hasn't changed much. The biggest influences of the ELaDiNa project were certain activities we saw other partners use, that we could transfer to our work. The ELaDiNa project helped us to reflect on our practice and showed us that we are on a good way of supporting language development."

"I probably listen a little more and talk more with the children. I am clearer and repeat words that are important and that I want the children to understand."

In the last question of the survey at the end of the project teachers were asked to give **examples of the impact of the ELaDiNa on the language development of a child** they had taught. One teacher responded that she can "t*hink of a student that has started to describe what she can see, hear, smell and so on and use things in nature telling fantasy stories when being outdoors."* Another teacher talked about a child that had been in their forest kindergarten for two years when the training started, and who mainly spoke Russian at home:

"When she came to us (at the age of three) she could hardly speak in German. She learned relatively quickly, but at some point we noticed that her development was stagnating. She had particular problems with forming sentences and grammar. That was about the beginning of ELaDiNa. I then started practising conversations with her - mostly while we were out in the forest. I had noticed that (because the conversations with her were so difficult and incomprehensible) I often answered her with "Yes" or "No" or "Hmm". Now I started asking and repeating what I understood of what was said. And I deliberately told little simple stories to demonstrate to her

how it works. In the meantime, a clear progress could be observed, which makes me very happy."

Many responded that they were not able to give examples from specific children and spoke in more general terms. One teacher said that her relationship with some children is much better now *"because I went with them to the children's forest"*. *"They opened up, told me about their interests and hobbies, showed me their discoveries. That has made it easier to connect in the classroom sometimes."* Another teacher commented that *"children who do not open themselves in class are more relaxed and open outside, and consequently learn verbal communication skills faster"*. Other teachers also witnessed that children are both more relaxed and learn faster outdoors.

ELaDiNa participants' observed practice before and after training

The next section details our findings from the video and photo stories submitted by the teachers to illustrate their PRACTICE. This data relates to their PURPOSES, PEDAGOGIES and PLACE.

Practice before training

We adopted a social constructivist approach in the data generation for the video analysis of the data. We asked teachers to provide video clips that "they believe show what is important about how early language is supported in natural environments." Aware that some videos would be in languages other than our own, we asked all participating settings before any training took place to submit videos with a commentary that explained the practice shown in the video. These were intended to provide a baseline of their practice to see what (if any) changes there were over the project. We provided feedback on these initial videos in December 2021 with suggestions of things that teachers might think about developing further.

We used a framework to analyse the data, considering themes around purpose, place, pedagogy and people. For the feedback report, we used our analyses to summarise some typical activity across all the submissions.

1. PURPOSES
Some of video commentaries set out specific goals for the activities shown. These included:

Targeting different language aspects

Type 1. Focus on specific vocabulary, such as seasonal variation, transport, mathematical or scientific terms.
Type 2. Focus on developing sentence structure and grammatically correct formation.
Type 3. Letter formation

Others were more general in supporting language development through:

Encouraging speaking and listening

Type 1. *Allowing extensive peer to peer interaction*
Type 2. *Supporting child's own interests.*
Type 3. *Extending conversations with children through questioning.*
Type 4. *Providing stimulating resources for role play and imagination*

2. THE INFLUENCE OF PLACE AND THE NATURAL ENVIRONMENT

Some different ways that 'nature' influenced the teaching and learning of language included:

Type 1. Natural object(s) or a living organism is by itself the stimulus for curiosity/interest/pity leading to language development with or without involvement of teacher. For example, helping worms stranded on a hard surface after rain.
Type 2. Natural object(s) or living organism gives inspiration to play or other activities that are beneficial to language development but are not themselves the focus of children's curiosity/interest. They may play the role as imaginary objects, e.g., leaves used as pretend food, or provide opportunities of some kind, such as a tree for climbing.
Type 3. Artificial object(s) is the stimulus for curiosity/interest and therefore language development, e.g., flags in trees near a duck pond.
Type 4. The natural environment (rather than a specific object/organism) constitutes the stimulus. An open space in an otherwise dense forest becomes a living room for role play. For example, when the forest allows two boys to work together to make a den, another boy to interact sensorily with the natural environment directly, and a girl, to pursue a different imaginative journey involving smaller natural objects.

Type 5. A (teacher) planned activity focusing on natural objects/organisms provides the stimuli for children's imagination. For example: a visit to a hollow tree where the snake has its hiding place.

Type 6. Other (teacher) planned activities where natural objects are not in focus. In one example, children are asked to spell names using twigs; some stay forming words from materials, while others are more interested in exploring the properties of the natural materials through play.

The background natural environment where the activity takes place may still be important for language development to occur, for example because it encourages children to speak more freely when outside the classroom.

3. PEDAGOGY

A variety of pedagogic approaches were evident. Some were more structured, while others centred on providing freedom for children to pursue their own interests and express themselves.

Type 1: Communication occurs among children only. Examples from the videos include: an animal in focus of two or more children's attention; children solving problems together; children in role play where the natural environment provides an important background.

In this type of pedagogy, children are free to fantasise on their own. They may learn words, pronunciation, and grammar from others with different backgrounds and more developed language. Children also may have the chance to see real things in the outdoors that fascinate them.

However, there is no correction of "faulty" language, no introduction of new words, etc. Some children may not get involved in communication.

Type 2. Communication is mainly between children, teacher support is very limited, with occasional questions or other input.

As in Type 1 pedagogy, there are peer learning opportunities but the teacher's input, although limited, may further language development, e.g., by expansion of children's words into a sentence and by repeating children's words correctly.

However, opportunities to develop vocabulary or grammar are not always used fully. Opportunities to increase the child's learning (e.g., about the natural world) are missed when teachers do not respond in detail to children's questions and answers.

Type 3. Active communication between children and teacher, and between the children.

A lively interchange amongst adults and children supports language development in many ways (grammar, vocabulary, pronunciation), yet children are still free to use their imagination and follow their interests. Contingent responses to children's exploration support sustained shared thinking, whereby the teacher builds upon children's line of thinking and takes them a little further in their language or conceptualisation. There are opportunities to increase children's learning by providing (scientifically or grammatically correct) answers, although this is not often evident in videos.

> **Type 4.** Strictly organised activity. The teacher is dominant in speaking and controlling the tasks. This allows targeting of specific goals but may risk children becoming disengaged and the language learned being separated from the child's own experience, limiting its application. In one example, the teacher uses repetition of the clapping of the number of syllables in a variety of words to reinforce children's learning.

4. PEOPLE

a) Adult roles

In many videos, the adult stands back and observes children's interactions and their conversations. This is sometimes to provide 'space' for longer periods of children speaking and listening. Sometimes adults develop children's utterances, for example making a sentence from a word that the child has spoken, capitalising on an interest (s)he has shown. Sometimes they are assessing the child's language development and needs.

At other times, a specific aspect of language development is the teacher's focus and they direct activities to elicit words of a certain type, such as about seasons.

They also use repetition or repetition plus an extension to develop the child's own use of language. While there were examples of supporting imaginative language, adults rarely appear to volunteer scientific facts in response to children's curiosity.

b) Children's roles

Overall, the most common practice shown was for children to follow their interests amongst the stimulating outdoor environment. Their dialogue is often more prolonged in conversation with peers, but it was difficult for us to assess the quality of the language unless this is mentioned in the commentary. They tended to answer adult questions more briefly.

In the formative feedback, we suggested that teachers going forward should think about the following points:

- Extending children's thinking and conceptualisation requires great sensitivity to children's interests and agency through creating sustained shared thinking exchanges with a more capable other. This might be through mixing abilities in peer groups or through adult responses to children's lines of thinking. This could be particularly relevant with second language acquisition.

- While fantasy and stories based on organisms or landscapes may stimulate imaginative language, it may also be appropriate to focus on developing language and understanding of the natural environment itself.

- Scientifically correct answers, responding to children's curiosity such as worms drowning in rain, are rarely offered. This may miss opportunities to develop scientific skills and understanding alongside language. Although it may be that some of these opportunities are worked on back in the classroom.

- A silent child may still be learning, but how do you assess that? How can all children find chances to express themselves?

We asked that as they continued to video their practice following the training, they consider:

- What stands out in making a difference to children's grasp of language when teaching outdoors to select examples to share.

- What we needed to know through their commentary so that we could understand the point that they were making about language development with their video example. This was because the language differences made it hard to pick up from the videos, subtleties about language use and pedagogic interventions without this information.

As a guide to selection, we suggested that they consider:

a) *Purpose:*
   – What is your intention for language development in the example you choose?
   – How does your intention for developing aspects of language inform the choice of place and your pedagogic role in supporting language?

b) *Place*
   – What added value, if any, does the natural environment contribute to your planned activity?
   – How do natural materials/living organisms support children's language use?

c) *Pedagogy*
   – What balance is there between fantasy and fact in the sorts of activities you plan and how might these relate to other areas of the curriculum and to different sorts of language?
   – Is structure important for your aim? Or what role does freedom play in the example you have chosen?
   – How might the stimulus of the outdoor environment continue developing language inside?

d) *People*
   – What is the adult's role?
   – What difference do groupings make?

– What opportunities are offered to better understand the children's needs for language development?

These questions and a request to focus on certain 'bus stops' (see the Training programme for more detail of these) helped teachers to focus on what practice for early language development in nature they would share for the next round of data collection.

Practice after training

Following the training in Marburg, Germany in September 2021, we asked teachers to send us examples of how they addressed these bus stops: Language Stimulating Strategies, Nature as a Stimulating Setting and Storytelling. The second set of videos following the training in Marburg were analysed in the autumn of 2022. Not all videos submitted provided a commentary to explain what is happening and why they had selected the example. This made it challenging to interpret some, especially in languages other than Swedish, but we endeavoured to represent them fairly. As with the first analysis to assist validation of our findings, we provided a feedback report for settings and partners to allow them to make any comments on our interpretations.

We used the same framework as in the baseline to analyse the data, considering themes: purpose, place, pedagogy, and people. If a video showed evidence of a feature, the relevant code was recorded once. However, multiple codes could be recorded for each video if they were present. The coded activities are summarised below. We acknowledge that it is not possible to be certain in our coding of videos without full awareness of what is being said in every case, and inevitably, the videos only represent snapshots of practice so these results should be interpreted with caution.

Some examples of commentaries are included to give insight into how some teachers were reviewing the videos they selected to share with the evaluation team.

1. PURPOSES
We found some settings reported, as they did in the baseline, more general support for basic interpersonal communicative skills in language development through:

Encouraging speaking and listening

A 1. Allowing extensive peer to peer interaction
A 2. Supporting child's own interests.
A 3. Extending conversations with children through questioning.
A 4. Providing stimulating resources for role play and imagination

Other videos seemed to address specific language development goals through the activities shown. As well as the first three types, vocabulary/academic language, sentence structure and grammar and letter formation that were evident in the baseline videos, these now included (shown in red in the following table):

Targeting different language aspects

B 1. Focus on specific vocabulary, such as seasonal variation, transport, mathematical or scientific terms.
B 2. Focus on developing sentence structure and grammatically correct formation.
B 3. Letter formation
B 4. Word formation/ syllables
B 5. Pronunciation
B 6. Communication/pragmatic/dialogue
B 7. Description
B 8. Story telling

This suggests that the range of language development goals or PURPOSES expanded during participation in the ElaDiNa project.

The relative prevalence of different types of language development demonstrated in the second set of videos is shown below in Table 10.

The most common aim seemed to be to extend conversation through questions (A3) for all three countries. However, a focus on specific vocabulary and academic language (B1) was the next most prevalent, with communication and dialogue (B6) and supporting a child's interests (A2) similarly evident in the video clips (Table 10). Storytelling (B8) also featured strongly but as we had specifically asked for examples of this, we cannot assume this is necessarily a dominant feature of settings' language development work.

Table 10: The prevalence of different language development aims shown in videos or photo stories.

Code	Meaning	No.	Rank
A1	Allowing peer to peer interaction	13	#3
A2	Supporting child's own interests	13	#3
A3	Extending conversations with children through questioning.	21	#1
A4	Providing stimulating resources for role play and imagination	12	

B1	Focus on specific vocabulary, such as seasonal variation, transport, mathematical or scientific terms.	15	#2
B2	Focus on developing sentence structure and grammatically correct formation	5	
B3	Letter formation	1	
B4	Word formation/ syllables	6	
B5	Pronunciation	7	
B6	Communication/pragmatic/dialogue	13	#3
B7	Description	4	
B8	Story telling	12	#6

Note: In all the tables in this section, No. refers to the number of times that the feature was coded across the video/photo stories received. A feature was coded once per video if it was present, so the total is higher than the number of videos/photostories as they may have covered multiple features.

Differences and similarities in purposes across countries

There were differences between countries in their apparent aims as shown in Figure 22 below. In Germany and Sweden, all four ways of encouraging speaking and listening were represented, while Slovenian settings did not show examples of following a child's interest.
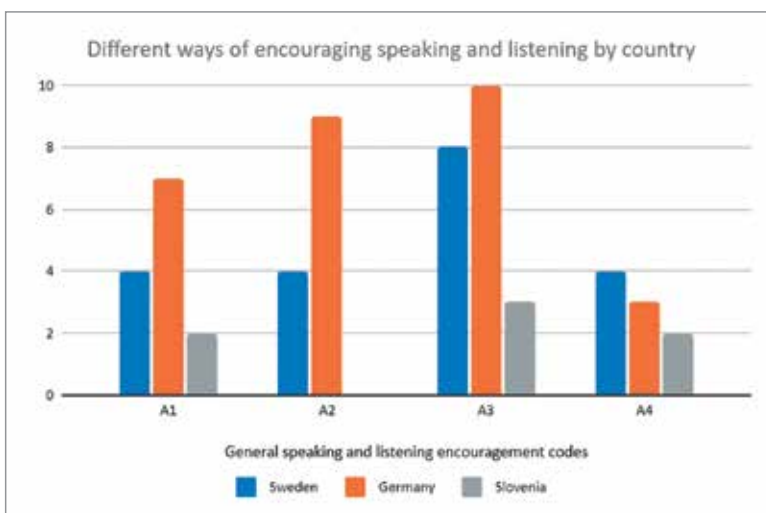
Figure 22: The different ways of encouraging speaking and listening in the three countries (Meanings of the codes for purposes A1 etc can be found in Table 10 above).
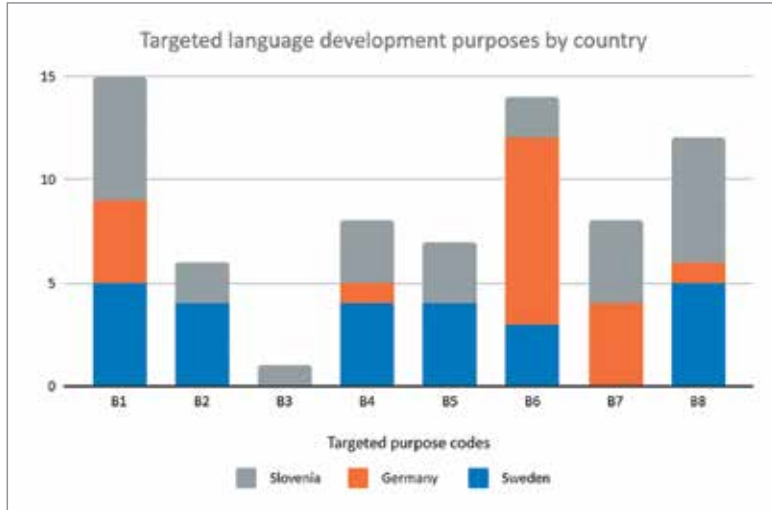
Figure 23: The different targeted language development purposes in the three countries (Meaning of codes B1 etc for targeted purposes can be found meaning of codes B1 etc in Table 10).

We can see from Figure 23 above that there is variation between countries on what language development outcomes seem to be targeted, with Slovenian settings addressing all eight types. A high proportion of German videos exhibited communication and dialogue purposes. There was only one example of writing for letter formation submitted.

2. PLACE - NATURAL ENVIRONMENTS

Some different ways that 'nature' influenced the teaching and learning of language were found to be present in the baseline and in the second set of videos.

Pl 1. Natural object(s) or a living organism is by itself the stimulus for curiosity/interest/pity leading to language development with or without involvement of teacher. For example, helping worms stranded on a hard surface after rain.
Pl 2. Natural object(s) or living organism gives inspiration to play or other activities that are beneficial to language development but are not themselves the focus of children's curiosity/interest. They may play the role as imaginary objects, e.g., leaves used as pretend food, or provide opportunities of some kind, such as a tree for climbing.
Pl 3. Artificial object(s) is the stimulus for curiosity/interest and therefore language development, e.g., flags in trees near a duck pond.
Pl 4. The natural environment (rather than a specific object/organism) constitutes the stimulus. An open space in an otherwise dense forest becomes a living room for role play. For example, when the forest allows two boys to work together to make a den, another boy to interact sensorily with the natural environment directly, and a girl, to pursue a different imaginative journey involving smaller natural objects.

Pl 5. A (teacher) planned activity focusing on natural objects/organisms provides the stimuli for children's imagination. For example: a visit to a hollow tree where the snake has its hiding place.

Pl 6. Other (teacher) planned activities where natural objects are not in focus. In one example, children are asked to spell names using twigs; some stay forming words from materials, while others are more interested in exploring the properties of the natural materials through play.

The background natural environment where the activity takes place may still be important for language development to occur, for example because it encourages children to speak more freely when outside the classroom.

In the second set of videos, these different types were evident as shown in Table 11 below. There are some examples of artificial objects such as story boxes, worksheets or identification guides being used, particularly with older age groups in Slovenia. One German setting focused children's attention on experiencing nature through visceral contact in a muddy stream and by closely observing ants and other small animals. We also found that Pl1 and Pl4 codes sometimes overlapped, so these categories could possibly be combined as they are both about nature itself stimulating language at a micro or macro level. Together, this combination was by far the most common coding regarding place, but there were also examples of teachers using natural objects within a structured activity and perhaps surprisingly, quite a high number of cases (7/54) where nature was essentially invisible in teacher-led activities outside.

Table 11: Different ways that the natural environment stimulates language.

Code	Meaning	No.	Rank
Pl1	Natural object /living organism focus of attention/curiosity stimulating language	16	#1
Pl2	Natural object /living organism used as symbol of something else stimulating language	4	
Pl3	Artificial object focus of attention/curiosity stimulating language	7	#4
Pl4	Wider natural environment focus of attention/curiosity stimulating language	5	
Pl5	Planned outdoor activity where natural objects/living organisms are intended to stimulate language	9	#3
Pl6	Planned outdoor activity where natural environment is not the focus	13	#2

Differences and similarities in the use of place features across countries

There were differences in the prevalence of how the place was used across the countries. As shown in the following Figure 24 below, German settings showed far more examples of living organisms and natural objects stimulating curiosity, description, speculation and discussion. In Slovenia, more activities were held outside without overt attention to nature. In Sweden, cuddly animals and pictures of animals were used in some instances, explaining the high prevalence of artificial object focus (Pl3). Overall, **the language development potential of motivating discussion when children discover living organisms in the natural environment is in line with findings of the OLE questionnaire**, which we discuss later.
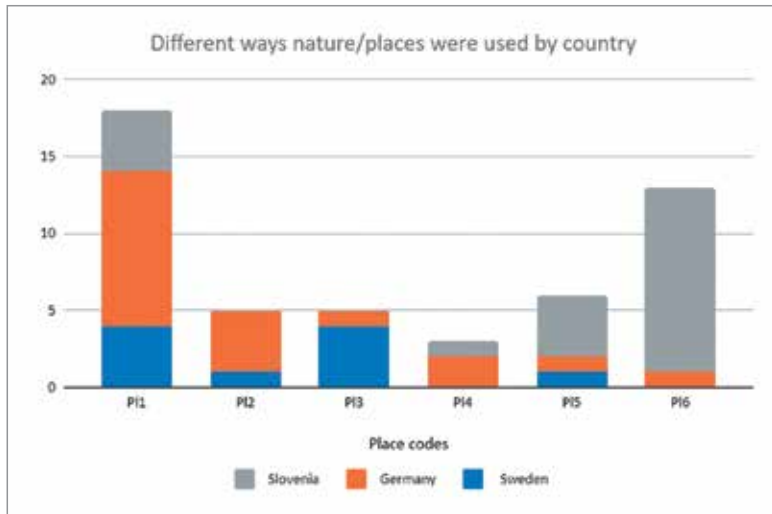
Figure 24: Ways that the natural environment stimulates language development in different countries (Place code meanings are given above in Table 11).

3. PEDAGOGY

A variety of pedagogical approaches were shown in the baseline videos. Some were more structured, while others were centred on providing freedom for children to pursue their own interests and express themselves.

Ped 1: Communication occurs among children only. Examples from the videos include: an animal in focus of two or more children's attention; children solving problems together; children in role play where the natural environment provides an important background.

In this type of pedagogy, children are free to fantasise on their own. They may learn words, pronunciation, and grammar from others with different backgrounds and more developed language. Children also may have the chance to see real things in the outdoors that fascinate them.

However, there is no correction of "faulty" language, no introduction of new words, etc. Some children may not get involved in communication.

Ped 2. Communication is mainly between children, teacher support is very limited, with occasional questions or other input.

As in Type 1 pedagogy, there are peer learning opportunities but the teacher's input, although limited, may further language development, e.g., by expansion of children's words into a sentence and by repeating children's words correctly.

However, opportunities to develop vocabulary or grammar are not always used fully. Opportunities to increase the child's learning (e.g., about the natural world) are missed when teachers do not respond in detail to children's questions and answers.

Ped 3. Active communication between children and teacher, and between the children.

A lively interchange amongst adults and children supports language development in many ways (grammar, vocabulary, pronunciation), yet children are still free to use their imagination and follow their interests. Contingent responses to children's exploration support sustained shared thinking, whereby the teacher builds upon children's line of thinking and takes them a little further in their language or conceptualisation. There are opportunities to increase children's learning by providing (scientifically or grammatically correct) answers, although this is not often evident in videos.

Ped 4. Strictly organised activity. The teacher is dominant in speaking and controlling the tasks. This allows targeting of specific goals but may risk children becoming disengaged and the language learned being separated from the child's own experience, limiting its application. In one example, the teacher uses repetition of the clapping of the number of syllables in a variety of words to reinforce children's learning.

In the follow up videos, the latter two types were particularly evident with very few examples of communication only between children. **Teachers seemed to be more actively guiding language development activities than in the baseline videos.**

Table 12: Different types of pedagogical approaches shown in videos.

Code	Meaning	No.	Rank
Ped1	Communication between peers	2	
Ped2	Communication mostly between children with little input from teacher	8	
Ped3	Active and mutual communication between adults and children	28	#1
Ped4	Teacher is dominant in speaking in structured activity	18	#2

Differences and similarities between pedagogies used across countries

With respect to pedagogies, Figure 25 shows that there also seemed to be marked differences between the countries' approaches, with Slovenian settings often

choosing more Type 4 structured teacher-led activities, although all three coun-
tries also showed very high levels of active communication between children and
teachers. The more structured sessions shared by settings in Slovenia may reflect
a greater number of older age groups being represented, which brings increased
demand for achieving curricular goals. There were only a couple of examples in
the second videos from Germany of teachers standing back and interaction being
purely between children; this practice was more common at baseline.
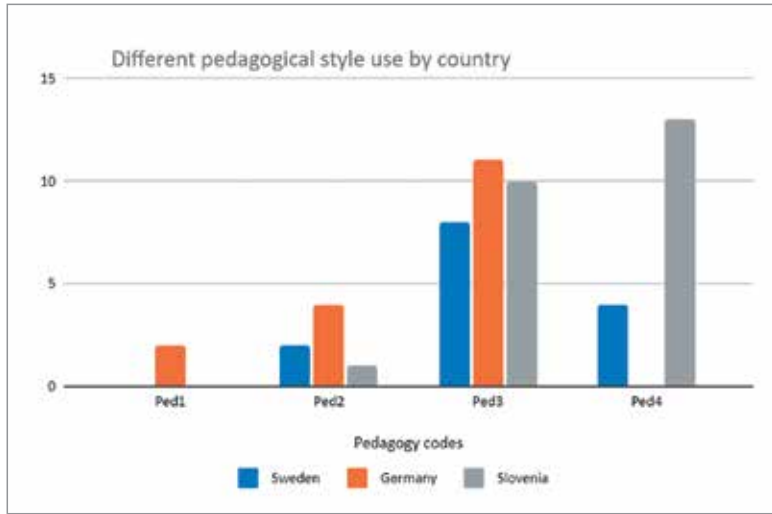
Figure 25: *The prevalence of different pedagogical approaches in the three countries*
(Pedagogical code meanings are given in Table 12 above).

4. PEOPLE
For the baseline report on video examples, we simply described the sorts of roles
that adults and children took in the videos. In analysis of the second set of videos,
we broke these down into different types and report on the prevalence of each.

a) *Adult roles*
**For adult roles, we found that Ad 3, where the teacher leads the activ-
ity and encourages participation was most common, followed by Ad 2
where the adult followed the child's interests.** There were fewer cases
where the adult either stood back and possibly missed opportunities to
extend children's language development and where the teacher domi-
nated the speaking and perhaps lessened children's opportunities to ver-
balise and express their own interests.

Table 13: Different adult roles show in videos.

Code	Meaning	No.	Rank
Ad 1.	Adult stands back	8	
Ad 2.	Adult follows child's interest	19	#2
Ad 3.	Adult leads activity, encouraging participation	25	#1
Ad 4.	Adult dominates activity and speaking	9	

There were different patterns in the adult roles adopted across the three countries as shown in Figure 26.
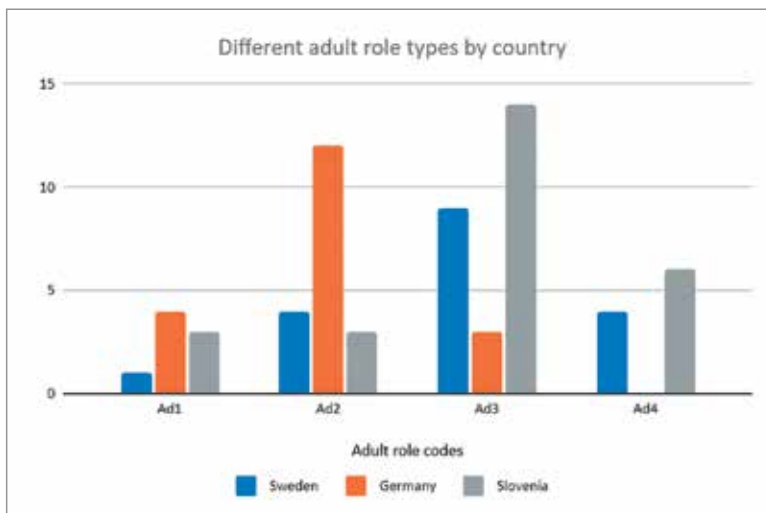
Figure 26: Prevalence of different adult roles in the three countries.

Reflecting the pedagogies exhibited in the videos, German teachers appeared to intervene in conversations between children to a lesser extent, while Slovenian and Swedish teachers occasionally dominated the talking.

b) Children's roles

We found that the **children in the second set of videos actively invited and shared their thoughts with their teachers and peers.** They also listened and responded to adults when required with few examples of them being passive or not in conversation with others in tasks.

Table 14: Different children's roles shown in videos/photo stories.

Code	Meaning	No.	Rank
Ch 1.	Child in independent activity (may be set by teacher)	12	#4
Ch 2.	Child invites/shares with peers	17	#2
Ch 3.	Child invites/shares with adult	23	#1
Ch 4.	Child listens and responds actively to adult	16	#3
Ch 5.	Child listens/responds passively to adult	5	

At baseline, the most common practice shown was for children to follow their interests independently amongst stimulating outdoor environments. Their dialogue was often more prolonged in conversation with peers, but it was difficult for us to assess the quality of the language unless it was explained in the commentary. They tended to answer adult questions more briefly.

After participation in the project, there appears to be more examples of adult involvement in scaffolding the language of children and extended conversations between children and adults. In Ch1 and Ch2 roles, children are working alone or with peers and these are more common within the videos from Germany, but the number of incidences of Ch2 and Ch3 show that children are actively engaging with and sharing their interests with both peers and adults in the majority of video examples across all three countries.

Figure 27 below shows the variation in children's roles by country. Perhaps in line with more structured pedagogies noted earlier, Slovenian children seemed to be listening and responding either actively or passively to adult initiated questions more frequently than the other children, but the videos also show they participate in all the identified types of roles. The children in German videos seem to be initiating dialogue with peers and adults more than in Sweden and Slovenia.
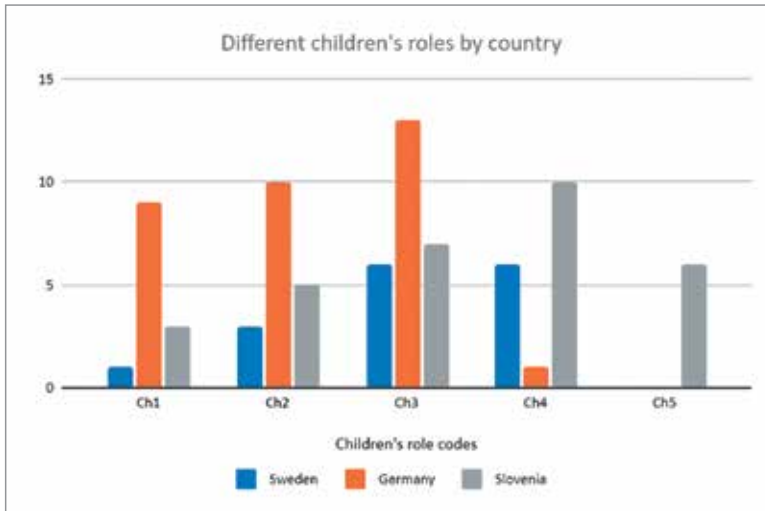
Figure 27: Children's roles in the videos from different countries.

ElaDiNa participants' use of language stimulating strategies

The videos and photo stories were also examined for evidence of different language stimulating strategies (LaSS) suggested at the training event in Marburg. The codes used and explanations about their meaning are shown in Table 15. Please note that the number of these strategies has been further expanded in ELaDiNa Practical Handbook.

Table 15: Language Stimulating Strategies (LaSS) coding.

LaSS 1.	**Fundamental language supportive attitude**
	• Get down to the child`s level.
	• Make and hold eye contact.
	• Put on a friendly facial expression.
	• Assume a facing body posture.
	• Listen and enquire further with real interest.
	• Undivided / full attention.
	• Create a good atmosphere.
	• Give time.

LaSS 2.	**Follow your child`s lead – establish joint attention!** • Observe, wait and listen (OWL). • Perceive and focus on child`s interest. • Give up your own leadership. • Listen carefully, be patient.
LaSS 3.	**Corrective repetition / Recasting** • Repeat an utterance replacing mistakes with corrections (correct pronunciation, words and/or correct grammar). • Use this strategy consistently.
LaSS 4.	**Confirm, repeat and expand** • Respond immediately but do not answer first – at first confirm the child`s utterance. • Repeat and build on what the child says. • Expand = add 1-2 more information, keep on child`s subject and interests.
LaSS 5.	**Parallel-talk and self-talk** • Parallel-talk: describe and comment on what the child is doing. • Self-talk: describe and comment on what you are doing.
LaSS 6.	**Elaborated forms of language** • Don`t use restricted forms of language, use elaborated. • Note abbreviated remarks. • Maximal strategy of verbalization instead of minimal.
LaSS 7.	**Frequently naming unknown words** • Repeat a new word several times within one activity / in meaningful context. • Each word must be heard (and experienced) 60-80 times before it can be actively used.
LaSS 8.	**Asking questions** *(N.B. it's not always possible to tell what sort of ?s are being asked)* • Use open not closed questions. • What are Quiz questions? Yes/no? • How to use alternative questions.

Overall, the most commonly observed language stimulating strategy was following the child's lead (LaSS2, 20/ 91) with repetition and confirmation (LaSS4, 18/91) also used in many instances as well as asking questions (LaSS8, 13/91). There were fewest examples of naming unknown words (LaSS7, 3/91).

Differences and similarities of use of language stimulating strategies across countries

What is not apparent from these totals are interesting patterns in the use of strategies between countries, which are shown in Figure 28 below.
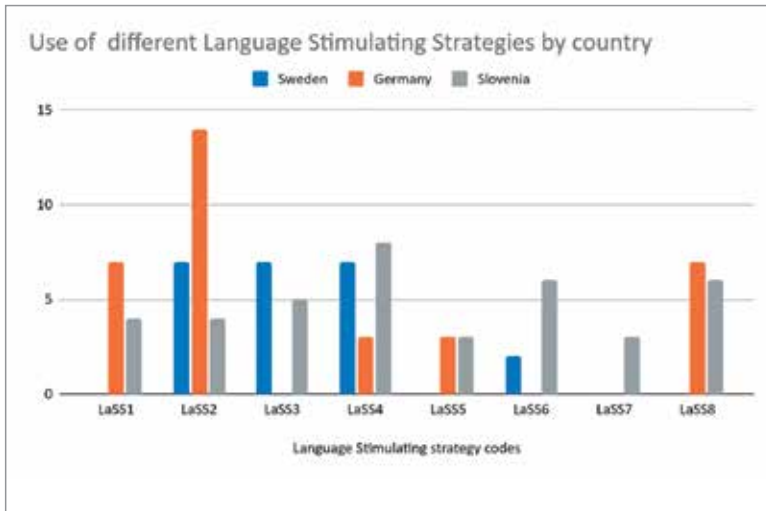
Figure 28: The relative incidence of language stimulating strategies evident in videos from different countries.

In Sweden, following the child's lead and establishing joint attention (LaSS2), corrective repetition/recasting (LaSS3) and confirming, repeating and expanding (LaSS4) were all equally used with elaborated forms of language (LaSS6) as the only other less frequently used strategy seen in the videos and photo stories. German videos showed most examples of fundamental language support (LaSS1), following the child's lead and establishing joint attention (LaSS2) and asking questions (LaSS8) with fewer examples of confirm, repeat, expand (LaSS4) and parallel and self-talk (LASS5) and no use of the other strategies were visible in the videos. In the Slovenian videos, all types of language stimulating strategies were seen with slightly more confirm, repeat, expand (LaSS4) instances than other responses. The reasons for these differences are not clear but cultural differences in pedagogical approaches may account for some variation in how compatible strategies are with the overarching ethos of teaching. Some settings may have actively sought to show the full range of strategies employed. Variation may also reflect differences in the numbers of videos received from KG and primary school phases, as certain strategies may be more suitable at different ages. Clearly, these findings need to be interpreted tentatively. More information about how these strategies were employed was provided by some teachers through their commentaries on videos and photo stories submitted.

Examples of reflective written commentaries

In this section, we offer some examples of commentaries that teachers shared with us to illustrate their thinking about interactions and the environment that are most supportive of children's language development.

Not only do teachers stimulate and extend language use, but they also find opportunities to assess language development needs.

> *"The children sit in their self-made teepee and talk to each other. At the beginning, the boys think about what kind of vehicle the teepee can turn into (monster trunk, four wheeler, race car) and decide that it can turn into anything. They turn it into a monster trunk and think about where to go (North Pole, Africa, the world of dinosaurs). Finally, the boy in the green jacket sings a song about dinosaurs saying "Cause I'm turning on dino music." At this point, it is clear how children in everyday life use their linguistic abilities through musical parameters and experiment with their voice by making different sounds. In this video, the children interact with each other and the teacher doesn't interfere. The children enjoy interacting and speaking together, and they enjoy exchanging ideas.*
>
> *Here, the teacher can consciously listen to the vocabulary, sentence structure and grammar and bring up the situation again later."*

In another example, the teacher notes how adults can build upon the wonder engendered by nature by providing words for children to express their feelings.

> *"I recorded the video "Snails" on a walk in June through the fields of Schröck. It had rained before, so that very many snails crossed our way. On the video are to be seen and/or heard: Finn (3,9 years), Finn (3,1 years), Nelke (3,0 years), Malte (3,5 years), Marlon (5,1 years) and Heidi (6 years). In total, the children's group consisted of 10 children between the ages of 3 and 6. I accompanied the children's group together with an educator in his year of apprenticeship.*
>
> *"My experience is that many students need help to 'put into words' what they experience with their senses in nature. Many students notice and marvel at what they see, hear, feel and experience and often show it, but lack the words to be able to talk about it. When we start our outdoor lessons, we often close our eyes and listen for sounds. The children can tell what they hear and I repeat, improve and expand the sentences based on what the children say. We do the same with what we see, smell and feel; weather-related phenomena such as heat, cold, wind or how something on the ground feels after frost, rain or snow or emotions that students experience."*

One teacher commented that **nature-based experiences can usefully be bridged back in the classroom by using different media that helps children to recall and consolidate their learning outside.**

> *"I believe in the interaction between experience outside and that we go into the classroom and continue our work there. Maybe with a movie, discussions, reflections, pictures, games, puzzles, concrete materials and various activities. After the forest visit this time, we took out our plastic insects and took a closer look at them. We talked about what we learned during our insect theme. It was a good opportunity to rehearse what we learned during the autumn."*

In another example of a commentary received, the teacher followed a series of prompts to aid their reflection on the video. This helped to direct attention to how language was being supported in nature and highlighted details about various contributory factors. It illustrates how **reviewing snippets of practice facilitated high levels of pedagogical awareness**.

> *"What is the nature of the adult interventions?*
> *Stimulating nature: the thirst for knowledge and curiosity are awakened. Children find exciting animals. Language ability is to be inspired by curiosity and imagination processes. The open nature space creates a relaxed atmosphere.*
>
> *What was their intention?*
> *To give the children space to observe the snails they discover and to talk about their observations. To gently guide the children linguistically, to give confidence to the younger, quieter children, and to strengthen their own self-worth.*
>
> *What interactions stimulated language the most? Consider people, places, own language use, resources.*
> *Close observation of different snails stimulated the children's language the most. They perceived phenomena they had not seen before. They were very interested and full of the urge to communicate. The older children invented fantastic names.*
> *I had asked questions and verbalised or named observations.*
> *There was no traffic on the paved dirt road, so the children were free to pursue their observations and were not disturbed. The group of children could spread out and either join a group or make their own discoveries and observations at their own pace and according to their own interests.*
>
> *How does this show the children's progress in language development?*
> *The children felt comfortable and wanted to go outside again, make discoveries. They talked about their discoveries at lunch after arriving at the daycare center. I learned from the parents that the children also told about their discoveries at home.*

The children gradually developed more and more joy in speaking.

What kind of language is promoted?
Communication, language comprehension, vocabulary and the formation of sounds, words and sentences.
Finn and Nelke have not been in the kindergarten group that long. Nelke has grown up bilingual. The children were to talk about their observations, find solutions together.
I wanted to be there as a contact person for the children and try to integrate the children into the children's group, build trust.

What are the strengths of the approach used?
Naming observations expands vocabulary and consolidates children's grammar.
Children are encouraged via questions to formulate linguistic expressions and develop further thoughts.

What could be done differently another time?
More open-ended questions could be asked. The second teacher could have supported the language support situation by taking care of the children who joined the group. Then I could have accompanied the children in the small group more intensively". (German primary school)

In the next example, the KG teacher explains a sequence of activities designed to encourage storytelling capabilities. This commentary describes the activities and includes reflections about which children in particular were affected and how.

"Warm up - Reading a story and giving some instructions.
The teacher read a fairy story about forest animals to two kindergarten classes. She then instructed that the children be divided into groups of five members. Each group had to agree which forest animal they would choose. On the way to another forest location, the children had to gather in groups different natural materials (sticks, leaves, moss), which they would use in building a home for their chosen animal.

Cosy wildlife neighbourhood - Build a home for a wild animal and give friends a guided tour of the house.
When we arrived at the agreed location, the groups chose a place where they would set up home for their animal in the 'neighbourhood'. When the home was completed and built, the children introduced their animal and its new house.

This is our forest story - make up a story and tell it to the whole group
During the course of the activity, the story was presented to the educator, and at the end we created a forest theatre, where children sat on a slope as in an amphitheatre, and observed each of the five groups that had a presentation of the story on stage. The children used their imagination

and the content of the stories was very interesting. Most of the children were happy to perform, and even the most timid were encouraged.

Fun story dice - throw the dice and tell me a story
The children on the forest meadow were instructed to close their eyes and listen, smell and feel their surroundings. They calmed down and settled into the forest environment. They then came individually to the teacher, where four dice with fun pictures rather than numbers were waiting for them. The instruction was to roll the dice all at once, then place them in a row with a certain side up and compose a fictional story from the selected pictures. The children used a lot of imagination in the task and the stories they presented were wonderful."

Our final example is a commentary which was received without a video, but it shows how the teacher has considered contributory factors that make movement games valuable for encouraging speaking and listening skills, including: diffusing the focus of attention from individuals lacking in confidence, requiring collaboration, and thereby promoting communication amongst peers.

"Movement games are important for children. Using movement games encourages children to move, relax and connect as a team. Children express themselves in a relaxed way because they simply enjoy the movement. Different motor skills, attention, spatial representations, a sense of rhythm are developed, and above all, children feel a sense of belonging to a group.
In our group, we encourage children to speak by using different types of movement games. Since the beginning of the school year, quite a few children did not want to communicate with other children, not even with me and my co-worker. From the start of the school year till now, they all made big progress. Those who didn't speak, now don't feel exposed during the game itself, so they don't have major speech problems. If we play games outdoors (grass, forest...), they relax even more and they cooperate more."

These examples of reflection show how **teachers value nature as a relaxing place where children feel encouraged to try out their language and how natural features provide stimuli for the imagination and strong feelings. They engender children's curiosity and create an impetus to communicate.**

Conclusions about changes in observed practice

In reviewing these results, we are conscious that video clips only offer snapshots of practice; they cannot capture all the ways that language is developed in settings. However, they have **revealed a diversity of practices across the countries and settings that would be difficult to communicate in other ways.** In comparison to the baseline videos, which already exhibited interesting practice in supporting

language development, there appears to be a richer repertoire of interactions between child, place, and others, showing repetition and elaboration strategies and the use of questioning to extend language after participation in the project. Some commentaries demonstrated that teachers were closely examining their support for language development in nature and reflecting on what worked well and what could be improved through capturing practice in the moment in a video and then reviewing it.

In our feedback report to teachers, we suggested that they consider the following key points from this analysis in their future practice:

- The training event in Sweden focused on becoming more sensitive to the affordances of natural environments and how they support language development. Harnessing the stimulation of nature can increase children's motivation to communicate and find words to express feelings and explain their thinking.

- Communication and dialogue are vital tools for progress academically, socially, and emotionally, and nature provides many opportunities for children to expand these skills alongside acquiring more formal language and literacy skills. Designing activities that demand collaboration will ensure that these continue to develop.

- Modelling how to formulate narratives through storytelling is a powerful tool. Nature provides many imaginative possibilities for inspiration. It can also be helpful to children who are less confident to contribute if they are part of a group communication.

Sensitivity to outdoor learning environment opportunities for language development

In the following section, we show **how teachers linked outdoor learning features to aspects of the natural surroundings. The aim of the Outdoor Learning Environment questionnaire and the second training were to raise teacher awareness of the affordances of natural environments for language development and refine understanding of their potential contribution to early language development.** These results relate to the importance of PLACE in language development in nature.

The basis for our survey about how teachers experienced the usefulness of different Outdoor Environmental Features (OLE) for language development in children was the Preschool Outdoor Environment Measurement Scale (POEMS),

developed by DeBord et al. (2005). POEMS is "an assessment tool for evaluating the quality of the outdoor environment in childcare centres for children 3-5 years old."

POEMS recognises the importance of the outdoor environment in children's holistic development; it thus has a much broader scope than the goal of our investigation, namely early language development. Another difference is that we were primarily interested in the natural environment rather than the outdoor environment in general.

POEMS is divided into five different domains. For our survey, we picked (mainly) natural features which we thought relevant from two of these domains: Physical environment and Play and Learning settings. Following discussions of the questionnaire with the ELaDiNa partnership team, we also added a number of natural phenomena that they deemed important based on their experience but were not included in POEMS (for example, 'weather'). In addition to these predetermined features, teachers were also able to suggest features (for example, 'mushrooms') that they found useful for children's language development in an open comment section 'Other'.

In our survey, we followed the POEMS format and organised the features into three different categories: Features in the physical environment, Natural Context/Affordances for Play and Learning for Language Development, and Natural Loose Parts/Organisms. In responding to the survey, teachers were invited to choose or suggest no more than five types of outdoor learning environment features from each category that they considered useful for language development.

However, we found that there appeared to be considerable overlap in the interpretation of these in the participant responses. To avoid duplication across these categories and to simplify the findings, we combined similar features from different categories in compiling this summary analysis.

Figure 29: Visual presentation of features chosen by the teachers in the survey (The size of words is approximately proportional to the number of entries).

Twenty-six teachers responded to the OLE survey. The above picture (Figure 29) was created in WordItOut using entries from the OLE survey. The relative sizes of the different features are approximately proportional to the number of entries for each feature. Only those features that were predetermined in the survey are included in this picture. Some features were combined, e.g., 'Sand' (Features in the physical environment) and 'Sand play' (Natural Context/Affordances for Play and Learning for Language Development), 'Sticks' and 'Branches' (both from Natural Loose Parts/Organisms) to simplify and make more visible, popular choices that appeared to be similarly interpreted by respondents. Similarly, features 'A variety of species of trees' and 'Trees' were combined as 'Trees' and 'Water features/pond' and 'Lake' collated as 'Pond & Lake' in our analysis and this picture.

As can be seen from the picture, 'Sand & Sand Play', 'Wild Animals', and 'Sticks and Branches' were the most valued features for language development according to the teachers.

Types of language development

The teachers were asked to explain why and provide an example of language development for each feature that they selected as valuable. To analyse these qualitative comments, we looked for **the types of language development outcomes teachers had mentioned and organised these into a framework.**

The following table shows **the types of language development included in comments and our definitions for them**. It should be acknowledged, however, that these types overlap to some extent and assignment to these may be open to interpretation. For example, in some cases 'talking' is simply expressing thoughts out loud but it might also mean that the child is voicing thoughts to communicate with others.

Table 16: Framework for types of early language development

TYPE OF LANGUAGE DEVELOPMENT	EXAMPLES	DEFINITION
ORAL	Speaking and listening	*The capacity to put thoughts and feelings into the spoken word and listen to others.*
Expression	Talking/ using language	*Putting into words.*
Communication	reporting	*Putting into words to tell another.*
Dialogue	Conversation/ discussion	*Sharing thoughts and ideas with others.*

TYPE OF LANGUAGE DEVELOPMENT	EXAMPLES	DEFINITION
Vocabulary	Naming/ academic language	*Expanding knowledge of words.*
Storytelling	Listening or telling stories	*Creating narrative form.*
Grammar	Comparatives & superlatives/ adverbs/	*Extending knowledge of grammatical forms in speech.*
READING	Reading books/signs and phonics	*Decoding written word and understanding meaning.*
WRITING	Writing a report, story or poem	*Using written word to express thoughts and feelings.*
Letter formation	Mark making in sand or using twigs to make letters	*Learning how to form letters of alphabet.*
Word formation	Writing name/ showing syllables	*Learning how to form and order letters in words.*
Sentence formation	Combining words into sentences	*Extending knowledge of grammatical forms in writing.*

We have shown these terms in **bold** throughout the following paragraphs. The comments also showed that there are a variety of mediating influences associated with each outdoor learning environment feature and language development outcome. Some are internal such as children's imagination; some are external such as learning about another topic or skill. These other influences are shown in ***bold and italic*** in the following sections. In this way, we can begin to appreciate the detail within processes of early language development in nature.

Features found useful for language development

In the next section, **we summarise teachers' descriptions of why features were useful, i.e., what "happens" in relation to these features and how they are mediated by other influences, and what kind of language development takes place in association with them.** To illustrate these associations, we have selected a sample of features. The included features were chosen partly based on their popularity among teachers, and partly to represent the following broad contexts: Woody environments, Grassy environments, Watery environments, Earth environments, Weather, and Designated areas. These contexts were the 'places' that the features are generally found in.

Woody environments

Sticks and branches were amongst the most mentioned outdoor learning environment features that were found useful for language development with 21 respondents citing examples of ways that they used them. At kindergarten level, they were seen to promote **expression**, **communication,** and **dialogue**. With older children, as well as these opportunities, they also helped expand children's **vocabulary,** and knowledge of **grammar**, such as comparatives and superlatives. In addition, they were tools for practising **letter, word, and sentence formation**. The principal ways that these language development outcomes were achieved in kindergarten children were through stimulating their *imagination* in *construction* and *role play* situations, which included *cooperation*. Older children also developed language through *maths* activities such as *comparisons* and *measuring*.

Example:

> *"Children often use sticks in games as swords, bows, knives or other "tools" that they need when hunting animals or protecting themselves, their hut or something else. Sticks are used to cook with, can be candles in a cake, a magic wand or any other prop that the children need in their play. Because sticks replace real things, it stimulates the children's use of language when they have to explain to other children what they do with the stick and what it represents.*
> *During planned teaching outdoors, we use sticks to compare lengths, lay patterns, practice adverbs and more."*

Logs and deadwood (from Features in the physical environment) were commented on by 16 teachers, about equally divided between KGs and primary schools. Deadwood and logs encourage *physical activity* in both the KGs and in the primary schools. Climbing and balancing logs often lead to *cooperation* and therefore discussion among children and, as one respondent explained, sometimes require a helping hand which is a good opportunity for **dialogue.** Risks in relation to dead trees that might fall unexpectedly is another reason for **communicating** and **discussing** with children. Insects and other small *animals that find habitats* in the wood inspire children in both types of schools and give opportunities for discussing science as well as other topics leading to development of *ecological literacy* in children. In the primary schools, teachers notice all these features trigger *imagination* among the children ("*A log can become a bus, a train, a boat, an airplane.*") which in turn encourages **storytelling** as a language developing activity. Teachers in the primary schools also mention possibilities for **word and letter formation** in relation to logs and deadwood: "*With the help of the material, they make different shapes (letters, numbers, characters), make up words.*" In summary, Logs and Deadwood enable language development through **communication and dialogue (questioning and discussion)**, and especially in the primary schools, through **storytelling** and **word and letter formation**.

Interestingly, **Leaves** (from the category Natural Loose Parts/Organisms) resulted in many more comments from the teachers in primary schools (13) than from teachers in KGs (2). Teachers frequently mentioned the use of leaves as **numerical representation** and **counting**; this may partly explain the imbalance since maths as a subject is likely to be more established in primary school than in preschool. But this alone can hardly account for the difference between school stages and perhaps chance may have played a part here as well.

Teachers describe how children **observe** and **collect** leaves and how they can be **compared** and **sorted** with respect to differences in size, colour, and shape. Leaves are also mentioned as topics in **science, environmental** and **art** education. Together all these activities lead to **discussions** and **descriptions** resulting in **speech development** and new **vocabulary**. Teachers also say children use leaves as props during **role play**, and that leaves inspire **storytelling**.

Example:

> *"They describe, think about how it (the leaf) ended up on the ground, where it used to grow, on which tree, at what time of year it fell off. All this can be included in a fantasy story about the life of a leaf in all seasons."*

In summary, leaves provide a plethora of possibilities for **dialogue**, **expression**, **communication,** and **storytelling** leading to language development.

Grassy environments

Grassy areas and **meadows** were valued as big open spaces for children's **freedom** and physical **movement** by seven primary school teachers and four kindergarten teachers. They supported language development by offering children chances to **set up rules** and **solve conflict** in **games**. These situations require **communication skills** and **discussion**. Teachers of older children also mentioned the **multisensory experience** of lying in grass and closely **observing** the flora and fauna within it, which developed powers of **description** and descriptive **vocabulary**. Meadows were also considered suitable environments for **storytelling** and **reading**.

Example:

> *"Children like to play football/run after each other on grassy areas. For this, rules have to be agreed upon and teams have to be formed. This requires communication - otherwise the game is no fun. Any conflicts that arise are discussed (sometimes with the help of educators)."*

Watery environments

In this analysis different categories from the survey have been brought together: "stream" and "pond" (Features in the physical environment), and "water features/ pond" (Natural Context/Affordances for Play and Learning for Language Develop-

ment). There were 15 entries in total, approximately the same number from pre-schools and primary schools.

Streams, lakes and ponds fascinate children (and adults, as commented by one respondent) and provide numerous possibilities for ***direct experience, observation, collection*** and **description** of various things. This includes ***sensory experiences*** such as "walking through the water, feeling every aspect of a little stream/river with bare feet. How cold, wet and slippery it can be." Water features therefore encourage **discussion** and **communication** involving **naming** and **description** of natural items as well as experiences. According to the teachers, water features enable children to develop their abilities to **form sentences** and increase their **vocabulary**. Water features also stimulate children's ***imagination*** and give many opportunities for ***construction play*** (such as creating dams in a stream or throwing sticks into a river watching "who's gonna win"), ***role play*** as well as **storytelling**, activities which also benefit language development. Some teachers testify that water features have a ***calming*** effect on children which itself may have a positive effect on language development.

Earthy environments

This analysis summarises the 14 comments from the categories "sand" (Features in the physical environment) and sand play (Natural Context/Affordances for Play and Learning for Language Development).

Teachers witness that **sand** encourages ***creativity*** and ***imagination***: "they create their own worlds". With sand and water children ***design*** and ***construct*** everything from cakes to castles, at the same time as they **comment** on or **describe** to other children and adults what they are building. Since children often ***collaborate*** together on joint construction projects, sand play brings about a lot of **debating** and **discussion** which let them practise and learn language skills from each other. The ability of sand play to trigger children's ***fantasy*** often leads to ***role play*** which can easily be followed up in **storytelling**. Using either a stick or their hands or fingers, children can use sand to practise **writing** or practise drawing. Teachers also stress the ***sensory experiences*** children get from sand, something which invites **expression** of feelings.

In summary, sand and sand play give children a multitude of opportunities to develop **oral** as well as **writing** language skills.

Rocks, pebbles and stones were chosen by eight teachers as supportive of language development, and were associated with opportunities for **discussion, description** and the development of **vocabulary**, including, at primary school, use of adjectives, opposites, similes and for showing syllables within words. They were also sometimes used as ***props*** for **storytelling**. They supported other learning topics such as ***science, maths (counting)*** and ***art*** at primary school level and

construction play throughout both stages. Routes towards language development seemed to be through appealing to the child's **imagination** and by offering a **tactile** resource.

Example:

> *"Stones can create many conversations. A stone is not just a stone. It has a weight, its surface is smooth, rough, hard, cold, hot (when the sun warms). So many colours and patterns. It changes together with water. The surface becomes glossy, and it changes colour. The stone has different shapes that you can fantasise about. It looks like... You can build with stones. How to get the tallest tower? Which stone needs to be at the bottom, at the top? Balance and physics."*

Weather

Weather was a stimulus for **conversation** as children made **observations** of **changes** in it according to nine teachers. This led to expanded **vocabulary, descriptions**, **explanations** and **reporting** to **communicate** these observations to others. Their **observation** of the weather, including storms, snow, rainbows and the passage of the seasons developed not only **academic language**, *scientific skills* and *science learning outcomes*, but also stimulated language development in **poetry** and stories created by their *imagination* and *emotional response* to the weather.

Example:

> *"We use weather for different activities and talking. We can go out when it is snowing and children can tell a story, poem about that. They can also observe snowflakes, describing them, making snowmen...also we can talk about fall, summer and spring and how weather is coherent with them. Also, when it is rainy, we write or tell a horror story. We go out and we listen to the rain. We describe how they are feeling when they are listening to the rain."*

Animals

Wild animals engendered *curiosity* and *excitement* in the children of both kindergarten and school age with twenty teachers reporting that they encouraged **oral language development** in **talking, asking questions** and **describing**. There were opportunities to develop **academic language** and **vocabulary** alongside *scientific skills* and *ecological literacy* through *investigation, observation* and *care* shown for the animals encountered. *Groupwork*, **discussion** and *sharing experiences* mediated how language was stimulated by the presence of animals in the outdoor learning environment.

Example:

> *"Wild animals arouse curiosity and great interest in children. They collect small animals together and look at them through a magnifying glass.*

The fascination is usually rounded off by an explanation from another child. The children often explain to each other what kind of odyssey it is and what peculiarities the animals have. In this way, various children become experts and the other children and adults become listeners.
Also, they take very good care of the animals. They build them houses. Provide them with water, leaves and other natural foods."

Designated areas

This section includes examples of places that include natural elements but have been designated for specific purposes by teachers.

A **storytelling area** is a place outside the classroom in nature that is designated by teachers to gather children together to tell stories or read to them. Often these may be combined with a ***fire pit*** and ***circle of logs*** to sit on or there may be a ***special storytelling chair*** to help children or teachers create the persona of 'storyteller'. Five kindergarten and seven schoolteachers mentioned this feature as useful for language development, although some mentioned that the area shifted according to the stories or could be mobile while walking through the forest. Making a place specially for stories seemed to create a ***calm, restful*** and ***focused*** atmosphere in a ***shared social space***. A circle and/or chair were props to support this ***focus*** and ***sharing*** to stimulate the ***imagination***. Language skills developed in this context included **dialogue**, especially good **listening, expression** through **recounting** and making up ***stories*** and ***singing***, and, at primary level, children developed **vocabulary**, **pronunciation** and **speaking** and practised their **reading**.

Example:
> *"Storytelling area is in the small meadow near the school. We decided to increase reading by using different places and different locations around the school. So, the children read books and later on also told about them to their schoolmates. We organized every day reading minutes, every day telling minutes - so all the children had to say at least something. We were colouring stones of kindness and talked a lot about friendship and humanity. We read in different outside locations - sitting, lying on the floor - under the trees. When we got together again, we made a circle and each pupil got the chance to talk about the sequence he/she read."*

Through **vegetable gardens,** children get involved in ***physical work*** including ***cultivating***, watering and ***harvesting***, and learn how to ***take care*** of plants. Since the work in the vegetable garden is a social activity involving ***cooperation***, this will involve a lot of **dialogue** among children, and in between teachers and children. Children thereby get a chance to develop their speech and **vocabulary**, including **academic language,** according to nine teachers.

The work in the garden gives children an understanding of the needs of plants and thereby a foundation for **understanding ecological processes** and where food is coming from. Vegetable gardens give possibilities for many **sensory experiences**, including tasting fruits and vegetables which encourage children to **talk** about what they have experienced.

Nature and language development outcomes

To explore the findings further, we looked across all the comments from kindergartens and primary schools and the associated language development outcomes. It should be remembered that the types of language development are our interpretations based on the comments made by teachers and there may be some inaccuracies and overlap between them.

Table 17: Progression and types of language development mentioned in connection with selected OLE features.

Types of language development	Definitions	No of incidences by age phase	
ORAL:		KG	School
Expression	Putting something into words	16	33
Communication	Putting something into words to tell another	25	20
Dialogue	Sharing thoughts and ideas with others	29	31
Vocabulary & academic language	Expanding knowledge of words	8	30
Storytelling	Developing the narrative form	6	21
Grammar	Expanding knowledge of grammatical rules of spoken word	2	6
READING	Decoding and understanding written texts		3
WRITING	Mark making corresponding to the spoken word	1	1
Letter formation		1	4
Word formation		1	2
Grammar	Expanding knowledge of grammatical rules of spoken word	-	2
ASSESSMENT	Checking correct forms/pronunciation used etc		1

Note: This table is based on participants' responses about affordances for language development of the following features: sticks and branches, logs and deadwood, leaves, wild animals, grassy areas, weather, streams, lakes and ponds, sand and sand play, rocks, pebbles and stones, storytelling area and vegetable garden.

We noticed marked differences in the frequency that **expression**, **vocabulary and academic language** and **storytelling** aspects of language development occurred, with more examples of these in the older age group, highlighted in the table in grey. Considering Cummins (1999) framework for language development, basic interpersonal communicative skills (BICS) may be seen as a necessary foundation for cognitive academic language proficiency (CALP). The increase in academic language seems to indicate that there is progression in what types of language development are supported by being in nature over the ages from 3-7 years. However, the results also confirm that BICS continue to be important elements of language development and that activities and OLE environments that support **communication** and **dialogue** remain important mediators for underpinning progress not only in language itself but across disciplines and situations.

Language development through other subjects

We also observed that **learning language through other disciplines seemed more prevalent in the primary phase**. In Table 18, we can see that maths and science were particularly common in the examples of how language development was supported in nature. This may reflect an increasingly structured curriculum and acknowledgement that teaching in nature can often address multiple curricular outcomes.

Table 18: Use of other learning topics across selected types of OLE feature.

Other learning topics	Number of examples	
	KG/Preschool	**Primary**
Maths (including related skills)	6	39
Science (including related skills)	12	27
Ecoliteracy	3	6
Physical skills	4	5
Art	-	6

How nature is mediated by teachers as children develop

Another way we examined the data in teachers' comments was looking at the internal and external mediation between the OLE feature and language outcomes. We use the umbrella term 'mediator' but these include both internal factors such as children's curiosity, imagination and excitement, and external factors such as play, social interactions, other learning topics or situations and other learning skills or uses mentioned. In the following two tables (Table 19 and 20), we show the main mediators talked about by teachers. This enables us to see more readily **what kinds of situations appear to accompany teaching and learning in nature in relation to these OLE features and what are the main language development outcomes from these combinations.**

Table 19: Principal mediators associated with OLE features for kindergarten aged children.

OLE features	Principal mediators	Principal language outcomes
Sticks and branches	Imagination/construction & role play/ cooperation	Talking/communication/ discussion
Logs and deadwood	Physical skills/animal habitats/ cooperation	Discussion/communication
Leaves	Comparisons & counting/ imagination & creativity	Talking/discussion
Wild animals	Curiosity/observation/care/ investigation	Talking/asking questions
Grassy areas	Play & sports/social interactions	Communication/ discussion
Weather	Observation/ imagination/ speculation/ decision making	Conversation/vocabulary/ storytelling
Streams, lakes and ponds	Play/ interest/imagination/ observation/ animal habitats	Communication/discussion
Rocks, pebbles and stones	Construction play/ comparisons	Description
Storytelling area	Special place/ togetherness/ Peaceful calming & restful/	Storytelling/ listening/ conversation
Vegetable garden	Harvesting & cultivating/direct multisensory experience/ observation/ cooperation	Talking & dialogue

Table 20: Principal mediators associated with OLE features for primary aged children.

OLE features	Principal mediators	Principal language outcomes
Sticks and branches	Play/ maths /comparisons and measuring/ tools for mark making	Communication/ grammar/
Logs and deadwood	Imagination/physical skills	Storytelling/ dialogue
Leaves	Maths, science and art/comparisons & sorting/ observation/ role play	Discussion/Storytelling
Wild animals	Science/Curiosity/observation/	Describing/asking questions
Grassy areas	Multisensory experience/ observation/ animals & plants	Describing/storytelling
Weather	Imagination/observation/seasons / Science	Discussion/vocabulary/ scientific language/storytelling
Streams, lakes and ponds	Direct experience/curiosity & interest/observation/collecting/ animals & plants	Description/listening/ conversations/ communication/vocabulary
Rocks, pebbles and stones	Maths/ Comparison/counting	Vocabulary/academic language/grammar
Storytelling area	Focus/groupwork/social	Storytelling/communication
Vegetable garden	Caretaking/cultivation/health promotion	Vocabulary/ academic language

Comparison of Table 19 and 20 suggests that there may be a shift towards more structured teaching of language, including grammar and academic language in the primary phase, while the kindergarten teachers appear principally to provide stimulating natural environments that support child-led language development through speaking and listening.

These associations suggest that '**nature' should not be thought of as a homogeneous entity, but its rich diversity prompts myriad pedagogical possibilities, dependent on the age and learning needs of children, that will support their early language development.**

Participants' response to training events

In the section that follows, we report on the teachers' response to the training sessions in Marburg, Germany and Tallnäs, near Jönköping, Sweden. We also refer to certain activities within the training that were designed to augment and complement developing knowledge, understanding and skills in early language development in nature. The teachers' comments from these activities are in the appendices (Appendix 5 and Appendix 6) and offer some valuable insights to how they see nature as promoting effective language development.

After each or the two training events (Marburg, Germany, September 2021 and Tallnäs, Sweden, September 2022) the participants were asked to fill in an evaluation survey. The survey consisted of a number of statements to which participants were asked to respond either Strongly agree, Agree, Disagree, or Strongly disagree. The statements concerned how clearly the goals of the events were formulated, the time required for each individual workshop or lecture, the mix of theory and practice and of indoor and outdoor activities, the delivery and methods used by the instructors, the perceived contribution by different activities to developed skills and understanding, and how well the content prepared the participants for their future teaching, etc. In open ended questions, the participants were also asked to comment on what session or aspect that made the biggest impression, and if there was anything that they would have liked to see changed. Finally, participants were asked what new learning about language development in nature they would take back to their workplace, and to provide suggestions for improvements (see appendix for blank evaluation survey). There were 23 and 17 answers to the survey of the first and second training event, respectively.

Responses to the survey of the first training event (Marburg) were almost entirely positive, especially concerning clarity of goals, time allowed for each topic during the event, the delivery and methods used by instructors, mix of theory and practice, and how well the course content prepared participants for their future teaching. Concerning these matters, with very few exceptions, everyone chose either of the alternatives Agree or Strongly agree. All respondents also agreed or strongly agreed that activities drew on their existing skills and knowledge. The statement that received the most negative response was "There were sufficient hands-on outdoor activities" with three out of 23 respondents choosing the alternative Disagree.

There was considerable variation in the answers to which session had made the biggest impression; outdoor and practical activities were amongst the most popular, with "ice breakers" and getting to know people from other schools and countries also receiving many votes. There were also many different responses to what

learning to bring back to their own schools. As a response to the question if anything could have been improved on, there were several different responses:

> *"I would have appreciated more language exercises that were connected to outdoor activities."*

> *"I had expected to get comments on the videos that we sent in, but no response was given during the workshop".*

> *"We could make it a bit more challenging. More practical examples and more specific information about language development in nature."*

> But many were also content with how the workshop was planned and carried out:
> *"No, everything was just right."*

Responses after the second training event (Tallnäs) were also generally positive. However, some of the statements received significantly lower scores than the first survey. The statements that received the most negative responses were: "Sufficient time was allowed for each topic" (6 Disagree out of 17 answers), "The course content has prepared me well for work" (5 Disagree), "The training had a good mix of theory and practical" (7 Disagree), and "There were sufficient hands-on outdoor activities" (6 Disagree and the only given Strongly disagree).

Open comments reinforced the view that several participants would have preferred more practical activities:

> *"I think we've wasted too much time rewatching our movies and discussing them".*

> *"The activities in different surroundings (lake, woods and so on) with focus on different parts of language and storytelling were my favourites because it had a distinct connection between nature and language".*

The suggestions for improvement also included several recommendations to increase the number of "concrete" practical activities in the outdoor environment.

Lastly, there were also many positive comments relating to this second training event, e.g.

> *"Actually, it is the sum of all the components of the training - the combination of theory, practical exercises and the exchange with the other colleagues. I really liked the joint evaluation of the videos we made." (To question what made the biggest impression)*

> *"Dear team! I found the training extraordinarily successful in all points and I really can't think of any way to improve it."*

The training activities that also elicited information about teachers' perspectives about associations between PLACES and PURPOSES included: LANGUAGE DE-

VELOPMENT POSSIBILITIES IN PLACES: Focus on place and purpose and OUT-DOOR LEARNING ENVIRONMENT (OLE) ARTWORKS. These provide further detail of teachers' insights about early language development in nature and are provided in appendices.

Partners' assessment of project

At the evaluation meeting in March 2023 in Jönköping, we held a focus group discussion with all attending project partners, asking them several questions about how they felt the project had gone at a personal and professional level.

Our first question was '**What hopes did you have for the project, what were your expectations?**' On a personal level, partners had hoped to learn from other people and cultures and collaborate to make a sustainable contribution to the field. Professionally, the hope had been that it would deepen understanding and competencies in early language development and draw on international expertise and theory to underpin practice. It was also hoped that documenting the process would interest a wider group than those participating and encourage them to use the outdoors for early language development.

Our next question was '**How far have these hopes been fulfilled?**' Partners said they had found the experience enjoyable and energising. It had also supported their English language proficiency to discuss high level ideas. It was felt that associate partners had put in a lot of time in useful preparation of maps and videos, so it would be good if they could also receive funding. A few settings had dropped out, and all partners had been challenged by working in another language and managing workloads. However, the project had offered a chance for some to work with teachers more closely and in another case, to carry out research related to the topic. These opportunities were warmly welcomed. The arrangement of possible teacher exchanges would be a desirable follow up. Learning opportunities from experts such as Tanya Richardson had also been appreciated. There was a sense that the project had supported teachers' development but that this was yet to be demonstrated as sustainable. It was thought that the strength of scientific input could lead to wider impacts.

The main successes were considered to be the training events where there were opportunities to all meet together with the teachers, who were so motivated and committed. It provided the chance to see different perspectives first hand. Feedback from teachers in between meetings was also highly appreciated.

The main challenges were reported as having time to do tasks, manage the project and keep in touch with teachers and within one's own organisation, and also to ensure the project can be made sustainable and impact practice more widely in the future. Monthly online meetings had helped keep the project momentum going and collaboration within and across countries also assisted with tackling the writing towards the end of the project.

Evaluation key points

1. **Most participating teachers initially believed that natural environments supported language development and this belief strengthened.** Although the majority felt that they used the same pedagogy inside and outside both before and after participation, **more believed that the role of the teacher and their relationship with children differed outdoors by the end of their involvement.** Evaluations of the training events were positive, and all felt that the project had affected their practice.

2. **A greater variety of language development aims was visible in the later examples of practice and teachers guided children's language development more actively.** Before training, the most common practice was for children to follow their interests in stimulating outdoor environments. Conversations with peers lasted longer than interactions with teachers. After training, teachers extending conversations with children through questions and a focus on specific vocabulary and academic language became the most observed practice, alongside supporting children's interests. In terms of language stimulating strategies, following the child's lead, repetition and confirmation of children's expressions, and asking questions were most common in later videos.

3. **Differences between the three countries practice examples suggest that cultural contexts should be considered in implementation.**

4. **Teachers were generic in describing their use of 'nature' or 'the outdoors' initially, but natural affordances became more explicit through ELaDiNa activities.** For example, using concrete examples of their practice, teachers linked 'sticks and branches' with opportunities to develop expression, communication, dialogue and vocabulary, and 'streams, lakes and ponds' with a focus on description and vocabulary. Nature is not homogeneous; indeed, its very diversity is what presents so many pedagogical possibilities to meet children's needs.

5. Expression, vocabulary and academic language and storytelling and language development through other academic subjects occurred significantly more in the older age groups, indicating progression in focus and practice between KG and primary school.

Part 3

A generic model of early language development in nature

Martin Vollmar

In Part 3, we move from existing knowledge, theory and our evaluation evidence to show how these factors come together in proposing a generic model of early language development in nature.

Preliminary remark

The term "Generic Model" in the case of the trinational, European project "ELaDiNa" refers to its core content, rationale and essential methods. It is a model that is located in the elementary and primary pedagogical area and is thus oriented towards practical application in day care centres and elementary schools. The claim and the characteristic of the model are generic in the sense that "ELaDiNa" as an approach to action is or should be applicable by as many pedagogical institutions caring for three-to-seven-year-old children as possible - regardless of their specific national, regional, local, spatial, linguistic and cultural conditions. In this respect, the "Generic Model" is to be understood as non-specific and general.

The specific conditions in each case will of course play a decisive role in the reception of the model and will be formative for its practical application in schools, day care centres, and in education and training of educators and teachers. By being generic and non-specific, the model is intended to be suitable for a wide range of applications. Thereby it should also have a stimulating effect. The impulse-giving and creative, which is also echoed in the word "generic" and is rooted in the Latin root "genus", is found here again.[1]

Thus, "Generic Model" is taken as a synonym for an "approach to action" or a "model of action" that aims to inspire/stimulate/activate pedagogical practice with knowledge of reasoning and action.

The model is the result of many years of practical and theoretical work of the ELaDiNa project partners in the fields of nature pedagogy and language development of children. The crucial question here was and is how the language supporting potential of stays and experiences in nature can be developed. This model serves as the content umbrella of the project. The project intellectual outputs ElaDiNa Training Programme, ElaDiNa Theoretical Handbook and ElaDiNa Practical Handbook are therefore linked to it accordingly.

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1   Otherwise, general and nonspecific meets an essential meaning of the term "generic," and it is used in various contexts with meanings of different kinds. In linguistics, for example, generic terms denote whole classes of objects or persons - i.e., generic concepts such as trees, books, people - and generic statements are nonspecific generalizations. In IT contexts, generic programs and models are used to mean roughly general constructs that are applicable in all sorts of specific contexts. In biology, features of a genus such as the upright gait are generic features of humans. Generic products have also become known from the pharmaceutical field as generics. Here, they describe drugs for which the active ingredient is no longer patented and can be replicated by companies other than the one developing the product. The distribution and better accessibility associated with this is also to be wished for the Generic Model of ELaDiNa, although it is of course not a market-shaped or technical product or concept.

Early language development

The ELaDiNa model conceives opportunities of language support that open up when kindergartens or elementary schools leave their "everyday-four-walls" and carry out their pedagogical practice with 3 to 7-year-old children in open natural spaces. Thus, two important topics for early education are related to each other: language development on the one hand and nature experiences on the other hand.

To conceptualize opportunities of language support and to implement them by means of the model, linguistic findings of a very fundamental nature are of importance. Without an understanding of what constitutes language and how children acquire language, an important background of the language stimulating ELaDiNa strategies would be missing. Furthermore, the mechanisms and factors of intuitional language acquisition and its factually observable obstacles serve as an important orientation and field of reference for the model. Finally, the ELaDiNa model follows the idea of an integrated, holistic language support based on implicit language learning and not the idea of an isolated training based on explicit language learning.

Language in general

Language is constitutive for human existence and its being-in-the-world. Therefore, language development as language acquisition is a very basic existential phenomenon. It is not just a matter of acquiring the essential tool of thinking. It is also about the essential communicative function of language.

Communicating, interacting and cooperating with each other becomes far more multifaceted, differentiated, and ultimately more powerful by means of language than is possible in social cooperation with non-linguistic sounds and gestures - for example of non-human species.

The cognitive and communicative function of human language relates to the fact that only through language the world opens, i.e., humans are not dependent on the close interaction of instincts and environment.[2] Linguistic symbols and syn-

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2   The term „world" is chosen here in the meaning as Plessner (2003) discusses it in distinction to „environment". In his philosophical anthropology, environment-bound life signifies the strict correspondence between the blueprint of an organism, e.g., an animal, and the part of its environment that fits it. Environment means closed functional circles, boundedness, strong instincts, specialization. The human species, on the other hand, is characterized by instinctual weakness, physical unspecializedness and, above all, by the ability to use linguistic symbols by means of linking rules. It must become acquainted with an open world by acting, language-based and concept-forming.

tactical rules of linkage make it possible to imagine a world that transcends the immediate field of action and perception. Finally, human languages are enormously complex and very productive because of their combinatorial nature. They are not only collections of words, but - according to the well-known statement of W. v. Humboldt - "language must make an infinite use of finite means." (see Taylor, 2017, 219f). Thus, past, present, different futures and possibilities of action can be conceived. The world divides itself quasi dualistically:

- Into a world in the "here and now", which is accessible via sensory organs.
- Into a world that can be imagined beyond the material world which can be perceived by the senses.

These two worlds, which are interwoven in constant mutuality, shape the human world and self-relationship. It creates present, past and future. All possible dimensions of the human being such as cognitions, emotions, senses or drives are structured by language or at least influenced in an ineluctable way.[3] Only language, concepts and logical sentences make it possible, for example, to deal with such fundamental affects as anger, rage, fear or jealousy in a socially acceptable way. Dealing with ambivalence conflicts in such a way that social emotion-based bonds remain stable is only possible if they can be verbalized and reflected upon.

Therefore, language is more than just a tool of thought and communication that can be picked up when needed: It "creates a context for human life and action", a "medium in which we move", a "feature of who we are" (Taylor, 2017, 175f).

How children acquire language?

Due to the enormous complexity of human languages, primary language acquisition is extraordinarily astonishing. No matter where a child is born, it will acquire language or even the languages spoken by the people of its immediate surrounding. Within the first four to five years the child will acquire the basic features of language.

Despite all the differences in specific languages and in the cultural and social conditions of growing up, the starting point, the mechanisms and interrelationships that affect a child's early language development are basically universal.

Taking a closer look at early language development, the following key linguistic and developmental findings emerge:

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3   With regard to cognitive development, for example, only a certain level of language development at the age of 3-4years enables thinking to be detached from action, i.e., to become context-free and to transcend the here and now of an immediate (stimulus) situation (cf. Andresen 2004).

Language development is based on interaction and communication

At birth, a child has already passed the first, prenatal-symbiotic phase of its developmental process and actively engages with its environment, initially by means of innate schemes such as crying, sucking, clinging, eye tracking and smiling. It interacts. It communicates. Children are skillful communicators (David et.al, 2003). These early, very physical and sensory-based forms of interaction and communication can already be understood as reciprocal and dialogical.

The child would not develop without a reaction from its environment. It depends on the responsiveness of caregivers who react to the child's activity. However, the child does not yet have the actual means to conduct a dialogue in the narrower sense: the logos, which means "word" in Greek. This circumstance is still reflected in the etymological root of the word "infant", which goes back to Latin "infans" and means "to be mute, not eloquent". The human being is born speechless.

Still without the tools of speech, the child finds itself in a world of speaking people. One could say that it bathes in language without being able to articulate itself linguistically (cf. Simms, 2008, 165). However, the term language bath should not be used to evoke an association of passiveness.

Children actively develop language

From the beginning children are focused on language, in particular on linguistic utterances of their caregivers (cf. Karmiloff/Karmiloff-Smith, 2001). But the language-focused and speechless child is anything but passive and merely absorbing, but rather, based on its primarily sensory-bodily modes of action, it actively attempts to extract rules and meanings from the linguistic or sound stream of the environment. Gradually it tries out to influence the environment with its own words. (cf. Schäfer, 2012). It is always associated with enormous gains in autonomy when children can gradually use language actively.

How children recognize structures and rules in the sound stream and actively use them in their own speech production can be seen, for example, in the overgeneralization of rules. Such errors as "goose - gooses" or "mouse - mouses" cannot be based on imitation, since this is almost never heard in adults. Rather, they are productive errors indicating that a rule for plural formation is understood and applied quasi-generically.

It is possible that innate dispositions contribute to children actively developing language. According to Chomsky, all this happens because of an innate ability, a so-called "Language Acquisition Device" (LAD), which makes it possible to acquire the enormously complex structure of human languages (first published in Chom-

sky, 1957). Understood as a universal, it also explains that children can acquire any natural language without difficulty.

In contrast, usage-based theories of language acquisition, such as Tomasello's (2019), explain language acquisition not in terms of such an innate language-specific ability, but in terms of the use of language by the child's social environment. Also, with Bruner the focus can be put on the responsive social environment, the importance of "willing interlocutors". With Bruner (2002), a "Language Acquisition Support System" (LASS) can be placed alongside to Chomsky's LAD.

Children need a stimulating linguistic and non-linguistic environment

Language acquisition depends above all on adults providing appropriate input not only as mere language models, but also as "willing interlocutors" (Bruner, 2002, 31) to the children. Following Bruner, so-called "joint action formats" play a special role, i.e., parent-child interactions that offer predictable and comprehensible patterns of action for the language-learning child on condition of a familiar, secure parent-child bond or attachment. Such formats as repeated play with disappearing objects enable children to take decisive steps or leaps in language comprehension and speaking.

Linguistic actions are assigned to non-linguistic actions and objects and become linkable and understandable for the child. One recognizes from this the importance of the linguistic and non-linguistic language context, i.e., the attention of the adults towards the child and all the objects that are interesting, arouse curiosity or meet curiosity.

If such objects come into the child's horizon - for example, by pointing at them - a joint attention of child and adult can develop in this way, which is extremely conducive to language development. Even if the child cannot yet understand or produce all the meanings of the linguistic link between word, action and object, such situations represent key situations in language development. Here the child can experience linguistic surplus meaning in a meaningful action. In these meaningful situations language is learned along the way. The decisive factors here are: responsive adults who give linguistic meanings to children's utterances and objects, and a stimulating non-linguistic environment with objects and phenomena that interest and touch the child, making him or her curious. For the child linguistic expressions are meaningful in these situations because there is something to share or there is something to discover, something to experience.

In such meaningful situations, something arises that is very important for a child's language development as well: the joy and delight of speaking. The child experiences how effectively, almost magically, language can expand action.
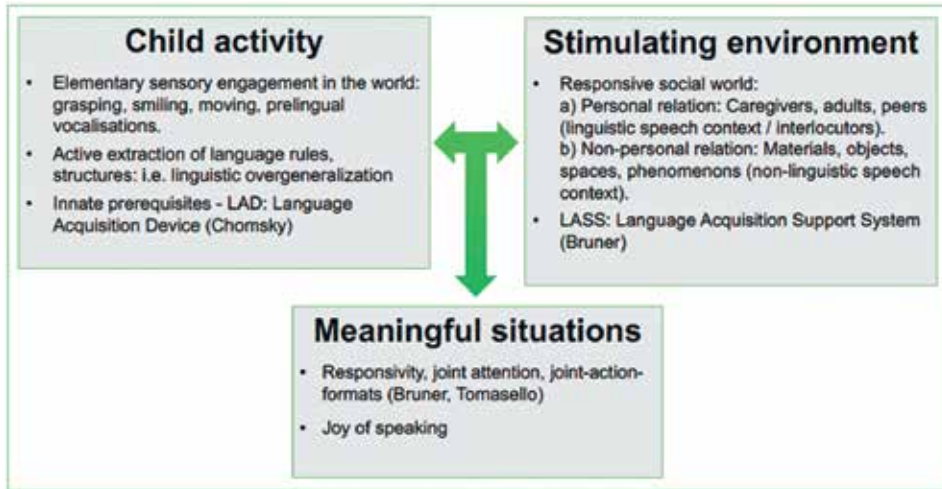
Figure 30: Key factors of language development – overview

Phases, stages, and milestones

To deal with the question of how children acquire language, following must be added to the above-mentioned key factors: the development of a child's linguistic competencies and performances takes place in typical phases or stages that build on each other and cannot be skipped. These are discussed in detail in Part 1 of this Theoretical Handbook.

Short overview

The progression can be divided very roughly into
- a pre-lingual phase up to the first spoken word at about one year of age and
- a lingual phase thereafter.

On closer consideration, this distinction is structured by many other phases, which in turn relate to different aspects of language acquisition. These include, for example, language comprehension, vocabulary, phonological competence, grammatical-syntactical rule competence, or situational use.[4]

Some selected milestones of these process are:
- At birth, nonverbal communication begins through pointing gestures, facial expressions and gestures.

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4   For a detailed description see contribution by Novak & Dolgan in Theoretical Handbook ELaDiNa

- At about 6 months, children understand their first words and concepts (Rothweiler & Meibauer 1999).
- Children perceive speech sounds of the surrounding language in an increasingly differentiated way and produce the first word at about 12 months (Kauschke 1999). The first step and the first word are thus close together and mark the child's growing autonomy.
- At about 2 years of age, children have a vocabulary of about 50 words, which expands rapidly (vocabulary sprint). They now combine individual words. This is the beginning of sentence or syntax development (Clahsen 1988). Gradually, children produce longer word sequences and recognize different word forms and grammatical elements.
- At about 3-4 years of age, most of the morphological and grammatical elements of a language have been acquired if language acquisition is undisturbed (Sachse 2015). Also, children begin to decontextualize language, i.e., they can detach language from the "real" situation (Andresen 2004) and some children already use the subjunctive in role play.
- At about 5-6 years of age, primary language acquisition is usually advanced to the point where the child understands passive sentence constructions and can form more complex sentences with various conjunctions.
- At around 6-8 years children use languages at a higher level, i.e., they use appropriate grammar in speech and written work and: many children become better storytellers.

From toddler to preschooler to schoolchild in terms of language development

Up to the beginning of school age, language acquisition is enormously fast and characterized by a rapid increase in language competence and performance. It is plausible to assume that there is a critical phase up to the third and fourth year of life, which represents the linguistic foundation for all later phases (cf. Oevermann, 1972; Hirsh-Pasek & Golnikoff, 2003, 91). However, especially for the kindergarten and beginning school years, there is a markedly high receptivity of children to linguistic impulses, which can also be related to the great neuronal plasticity of the brain in childhood.

Under normal conditions, the beginning of kindergarten between the ages of three and four is a phase in which children have already mastered most of the grammatical structures of their native language. They can form longer sentences and also have a relatively differentiated vocabulary and daily vocabulary growth. Also, the word meanings have approached the adult language far. For Andresen (2004, 57), the fourth year of life represents a phase of radical change that has to do with the grown linguistic-communicative abilities.

Many children develop a completely new interest in language during this time. To explore the world, for example, they use their increasingly rich linguistic foundation in countless why- and how-questions.

One change in particular should be emphasized: Children begin to decontextualize language without already being able to think in abstract terms. More and more they can detach language from the „real" situation e.g. in storytelling. It is no longer just the language use of dialogue and conversation about the perceived situation. Increasingly, it goes beyond the here and now of a situation. The gradual use of the subjunctive, which is the language's form of possibility, also fits in with this.

A further language-related challenge comes with school entry: the acquisition of written language. Reading and writing means an enormous developmental step for children, since in participation in society is linked to the mastery of written language. It is the visible step from oracy to literacy. However, literacy is based primarily on predictors acquired in oral: Vocabulary, storytelling, and phonological awareness (Hirsh-Pasek & Golnikoff, 2003, 102ff).

Variability, milestones and hurdles

The phase descriptions of language development are oriented towards a successful norm development, with approximate time spans. However, the individual developmental processes are highly variable and do not adhere to exact milestone specifications in terms of time.

The high variability is evident, for example, regarding the acquisition of a second language, which enriches the child's language development. Basically, second language acquisition follows the same principles as first language acquisition, i.e., children gradually pick up the language of their environment in communication. Depending on whether the acquisition of several languages occurs simultaneously from birth or successively from 2 to 4 years of age or successively from 4 to 7 years of age, different conditions result. The later a second language is acquired, the greater the transfer effects from the first language, which can also lead to problems, especially in the acquisition of the grammar of a new language.[5] Overall, given children's high receptivity to language stimuli, second or multiple language acquisition represents an extremely valuable expansion of language capacity. The phase structure remains but may shift.

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[5] From about 7 years of age the grammatical competencies of the first language are automated in the speaker to such an extent that a spontaneous, uncontrolled everyday language acquisition of the grammatical system is hardly possible, and it requires the conscious application of grammatical rules as in the learning of foreign languages in school.

The high variability can also be seen, when children at the age of two actively use less than 50 words, hardly speak and do not form two-word sentences, but then catch up and no longer show any language problems.[6]

But with all normal variability, there are variations that can be problematic:

- An increased number of children have speech problems or even disorders that can negatively affect their developmental process. Thus, a deficient language development is a predictor of social disadvantage: For example, school dropouts are significantly higher (see Law et.al., 2009).
- Bernstein (1964) already pointed out that lower social classes have less supportive language-stimulating environmental conditions than upper social classes, which may be manifested in different language performances: speaking in terms of restricted or elaborated codes (see also Clegg & Ginsborg, 2006).

Despite the diversity of the individual problems, it can be stated for very many cases: The "decisive factor for deficient language acquisition [is] an inadequate language environment" (Neumann et.al., 2009, 9).

Studies such as the influential one by Hart & Risley (1995) about "meaningful differences" have examined the quantity and quality of parental language input with respect to the socio-economic status of families. They found impressive differences between lower and higher socio-economic status families. According to this, significantly more difficult language environments exist in lower class families: Far fewer direct parent-child speech acts take place and the emphasis is on following orders and rebukes rather than on affirmation, recognition, and the rewarding nature of linguistic interaction (cf. Hirsh-Pasek & Golnikoff, 2003, 89ff). However, these findings are suspected of branding the language styles of socially disadvantaged, poor, lower-class parents as deficient (Dudley-Marling, 2009). Indeed, too quick and easy attributions and conclusions interpreting correlations as causalities should not be made. However, general attention should be drawn here to the correlation that parental speech acts addressed directly to the child have an important impact on child language development. Many findings from linguistics show this (e.g. Hoff, 2003; Huttenlocher, 2010). Infants who experienced more child-directed speech became more efficient in processing familiar words in real time and had larger expressive vocabularies (Weisleder & Fernald, 2013). In any case, quantity and quality of language input play a major role.

From a social and educational perspective these findings about differences in language development and its environmental conditions matter a lot. Even in the case of children with language problems, developmental delays or disorders, the basic

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6   However, there is also a high proportion of so-called "late talkers" who do not become "late bloomers" and develop serious language problems, for example, due to a lack of language stimulation. (cf. Zollinger, 2010, 290).

mechanisms of language acquisition are not suspended. Therefore, explicit learning in the style of instruction or training runs the risk of setting up a stigmatizing separate world for the young child, which would make learning more difficult. In any case, the process of how linguistic abilities are formed in childhood is a central developmental process of every individual. Finally, as already discussed, language is a key to the world - and to oneself.

As Part 1 of this handbook pointed out, primary language acquisition occurs incidentally in the context of meaningful, dialogic communications in a responsive linguistic and non-linguistic environment. Without instruction, but with language partners. An everyday integrated language support, which addresses 3–7-year-old children, should be oriented to this.

Without the influence of the non-linguistic environment of a child, the stimuli for action and atmospheres emanating from it, the development of language would be grasped too one-dimensionally. Bruner's concept of the "Language Acquisition Support System (LASS)" is mainly referred to the social world in the form of reference persons. But the social world also includes the world of things, which is stimulating, meaningful or significant to a greater or lesser extent. When it comes to things, linguists mostly think of artifacts, i.e., intentionally produced objects. The instructive picture book in the hands of the mother facing the child may be a typical image here. But the "LASS" can be equally extended to the support of the non-human world, of non-human beings, things, atmospheres or phenomena - to nature. It has a special potential.

Nature as a language supporting environment

Natural spaces[7] are characterized by an interesting stimulation potential for child development and especially also for language development. Compared with mostly regulated and designed everyday spaces, natural spaces are strangely different. Particularly because they are not designed and are characterized by the sphere of the non-human, they open possibilities for experience, interaction and communication that are not provided in classrooms, nurseries, or group rooms in kinder-

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7   Nature is to be understood here in the classical sense: It is the section of the world that has been created and develop without the constant intervention of humans, accordingly, has inherent arbitrary dynamics not produced by humans, is perceptible to the senses, and is part of the human lifeworld (cf. Seel 1996, 20). In very practical terms, it is about open natural spaces or landscapes that are more or less wild and accessible to people.

gartens. Associations between nature and language support have been detailed in Part 1 and Part 2 of this handbook.

Outdoors in nature, many children and even groups of children behave differently than they do indoors. Children who adults might not expect at first open up and become talkative while enthusiastically picking leaves or mushrooms. Other, more restless children settle down and become absorbed in investigating an old rotten tree stump and talking to a centipede there. Others loudly negotiate the order of when each child is allowed to hold the blue iridescent beetle in its hands - but the creepy-crawly has its own ideas and crawls up the anorak sleeve under astonished glances: Questions arise like: "How does he do that with his skinny little legs?"

Situations in nature are often characterized by such special dynamics. The exemplary scenes already hint at the language-promoting potential that can lie in the natural non-linguistic environment. What actually characterizes natural spaces in this context?

Natural spaces are special: characteristics, options, and affordances

Of course, natural spaces can be very different: Open fields, broad-leaf forests, mixed forests, boreal forests, water landscapes on rivers, streams, lakes or the sea, rocky landscapes, snow or ice landscapes - to name just a few natural spaces typical of many areas around the world. "Most natural landscapes are composed of water in its liquid or solid state, plants, rocks/minerals, or a combination of the three" (Li et.al. 2022). However, this consideration captures primarily what is permanent and enduring about a natural area. This is not sufficient.

Despite all the specificity that distinguishes the concrete accessible natural areas from each other, the following can be considered as a common denominator: Each individual natural space offers a universe of wide variety and diversity, which is after all not only characterized by different plants, rocks or/and waters. Natural spaces and landscapes are animated and in constant seasonal and diurnal, weather-related variations and changes. They offer a continuous change of light and dark, cold and warm, near and far, wet and dry; it imposes itself on sensory perception in that, for example, wind, temperatures and surfaces stimulate the skin, light, colors and distances affect the eye, up to multiform stimuli of the auditory and olfactory space or even of the balance (Sebba, 1981). Natural environments are full of surprises, full of liveliness and at the same time they represent constancy and permanence. This makes them an exciting play and activity space for children. Particular links between different natural features and pedagogical possibilities for language development are described in Part 2 of this handbook.

The abundance of unknown things and living beings, the range of motion, the possibilities to play and have adventures rarely present themselves indoors. In nature,

small and big mysteries and secrets open up under stones, there are strange crawl-ing animals with countless feet, others without feet in dead wood or in a puddle, but also soft, flattering moss, huge trees that protect from the rain, sticks that act as magic wands or balancing sticks, atmospheres that invite you to linger or even to set off into a canyon: The variety and quality of options meet children's motiva-tion to experience the world intensively.

These descriptions are not mere descriptions of features, but they explain the complementarity of spatial features and possibilities of action of a subject. Gib-son's (1979) notion of "affordances" can also be used in this sense. The term em-phasizes a kind of fit of space to motives for action and, in particular, the intense perception of the person acting. In this respect, the features of natural spaces can be understood as opportunities and demands for action that intensely engages the child in an activity, e.g., discovering, moving, exploring, investigating, understand-ing, proving oneself, or coming to rest.

Generally stated, the qualities of the natural environment are conducive to chil-dren's development as discussed in Part 1 of this handbook. The manifold special features of the different natural areas can be summarized in a broad double struc-ture:

- On the one hand, nature is challenging, surprising, diverse, lively, myste-rious, resistant and constantly changing, while
- on the other hand, it presents itself as something continuous, enduring and sheltering (cf. Gebhard, 2001; Kahn & Kellert, 2002; Sebba, 1991).

The two aspects accommodate the two important motivational bases of curiosity and safety. For children in particular, curiosity always means physical curiosity too, i.e., being free to explore space according to their own plan and to take and manage risks. Natural spaces are predestined for this.

Moreover, the stimula-tion potential of natural settings seems to enable forms of attention that are virtually effortless and above all self-mo-tivated without being over-stimulated (see Kaplan, 1995, 172). These forms of "effortless atten-tion" provide favourable conditions for intensive learning processes and intensive experiences.
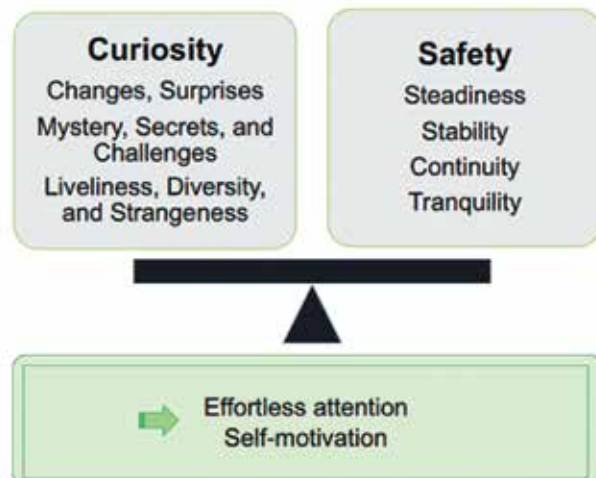
In summary, natural spaces can be conceptualized as extraordinary, stimulating experiential spaces. Extraordinary here also means that they represent a kind of counter-world for many children and also adults in view of increasing distance from nature, urbanization and domestication. The ELaDiNa model therefore advocates, like many outdoor educational initiatives and approaches, that we do not lose sight of accessible natural spaces even more, but rather create access and promote closeness to nature for good reasons.[8]

Impact structure: Nature and early language development

The stimulating and demanding character of natural spaces represents the basis of the language-promoting model. The demands create meaningful situations that are speech and language prompts. Thus, ELaDiNa picks up the significant connections for language development highlighted in Parts 1 and 2 of this handbook. The approach supports early language development through

- focusing on intensive and multi-sensory engagement,
- to create meaningful situations of mutuality
- in an optimal stimulating natural environment.

This sequence echoes elements of the pathway to raising attainment through outdoor learning (Waite et al. 2016) that is illustrated in Figure 3 of Part 1. It deepens the interplay of children's activity and motivation on the one hand and non-linguistic natural environment on the other hand.

Nature as an interlocutor without language

Although nature as a non-linguistic environment cannot speak in the literal sense, the metaphorical figure of a talking nature – natura loquitur[9] – or a nature turned towards can illustrate the demanding character:

> *"Trees want to be climbed, berries want to be eaten, mushrooms want to be picked and animal tracks want to be identified and followed, unknown flowers, ferns and mosses want to be identified, bushes are alluring hiding places, insects want to be studied at close range, animals assumed to be there want to be found, sounds want to be investigated and strange smells identified and the sudden outburst of colour in the autumn wants to be explained." (Becker, 2011, 7f)*

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8   The question of access to natural spaces as an open landscape always refers to legal foundations, which can be very different in different countries. Access rights must therefore be clarified in advance and, if necessary, also fought for.

9   In literary studies, this is a topos to capture the nature poetry of the Romantic poet Joseph von Eichendorff (cf. Bormann 1968).

For children who have a sense of wonder and exploration, this is a valid description of a forest with its sensory diversity and concise phenomena and atmospheres. In the literal sense, nature cannot speak, its mode of encounter is sensory and tangible, not abstract and distant. But metaphorically, nature can become an interlocutor. An old aphorism expresses this connection pointedly:

"Nature: She has neither language nor discourse; but she creates tongues and hearts, by which she feels and speaks." (Tobler, 1869 (1782))[10]

With regard to the communicative framework conditions in natural spaces, further positive effects on the support of children's language development can be found, especially in groups of children: Particularly in comparison to indoor spaces, where many institutions spend most of their time communicating with children, natural spaces are much less exposed to noise and disturbance. The acoustic space of a forest or an open landscape is already interesting in itself as a differentiated, rich soundscape. Noises and sounds are usually heard very clearly and without distortion, which can be perceived as harmonious and stimulating. Usually, the noise level is much lower than in the corridors, classrooms, or group rooms of educational institutions, where the sound of noise sources is reflected or refracted on many smooth surfaces. One's own talking, walking, or working is less intrusive in open spaces because the distances between people can also be larger.

Natural rooms are therefore extremely favourable for language development, since no noise-induced, sickening stress makes communication more difficult and listening to each other is possible more effortlessly and accurately. Due to the spaciousness of the room, there are also fewer process interruptions and disturbances.

Children's developmental driving forces

It has been outlined that the stimulation and demanding potential of natural spaces corresponds to children's developmental needs and children's motivation to act. This correspondence is crucial to the language-promoting intent of the model in order to establish meaningful language situations. The following four selected driving forces are particularly suitable for making the connection between nature-child-language clear. They overlap and are interwoven but can be distinguished and named in their specific language reference.

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10   The quotation comes from an aphoristic essay that Goethe included in his writings but was probably written by the Swiss writer Georg Christoph Tobler, who moved in Goethe's circles in 1781. It served as a preface and prelude for the first issue of the renowned scientific magazine "Nature" in 1869, translated by editor and friend of Darwin F.R.S. Huxley who called it a "wonderful rhapsody on 'Nature'".

1. Curiosity – the lust for the new
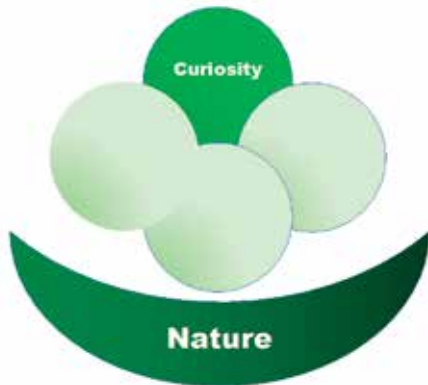
Development is based on the confrontation with the new being a synonym for the unknown, unfamiliar, or strange. On the one hand, the new triggers a kind of crisis that a subject wanting to develop must face. The unknown new, something strange or a mystery objectively irritates the routine action. It is unsettling. On the other hand, however, from an early age, children possess a curious, open basic attitude that enables them to face new and unknown things - in measured doses, of course - to explore them and even to seek them out independently. "Curiosity causes disquiet in the individual and this disquiet can only be relieved by the unfamiliar" (Becker, 2016, 24). However, for the curious child, the new, which differs from the known, is not an irritation to be avoided. It rather resembles the "nutritional value of a food source from the perspective of the hungry" (Bischof, 1985, 241). How natural spaces can serve this hunger with countless remarkable phenomena – the variety of forms of life – has been outlined earlier in the generic model and in Parts and 2 of this handbook.

To activate curiosity, a "relaxed field" (Bally cit. Franzmann, 2013, 207) contributes so that children are not overwhelmed, and fear becomes dominant as an antagonist of curiosity. When looking at conditions conducive to exploration and curiosity, external and internal factors become issues:

- Natural space, with its double aspect of curiosity-awakening change and variety and safety-providing stability, offers good conditions as a non-linguistic environment.
- But also, the social framework as a linguistic environment plays a major role here.
- The inner source of safety, self-confidence, ultimately determines aversive or curious behaviour. It is both a prerequisite and a result of exploring the new. If the conditions are right, then children are predestined to immerse themselves in dialogue with the new without time pressure.

Acting out of this central driving force of child development is directly linked to language development. Curiosity as an active dialogue with the unknown, which can also be called questioning the unknown, tries to find out what the unknown is all about, what it is called or what it can be compared with. It is obvious that this means a direct speech impulse. Unknown natural phenomena raise all kinds of questions - the most obvious question is "What is it?" or more complex "Why is that?". The unknown, which falls to attention, is found or imposes itself and is

not yet determined and named. Names, words and explanations for the unknown must be found. These associations are illustrated through the evaluation findings described in Part 2 of this handbook.

The interplay of curiosity and nature becomes a stimulus for speech, which, depending on the available interlocutors, can become an impulse for a longer conversation. Curiosity, the lust for new, the thirst for knowledge is awakened and "fed" when children find exciting objects and phenomena in need of explanation.

2. Imagination – the lust for the possible and the impossible

The power of imagination is linked to curiosity. Curious questions like "What is under the stone? What is behind the tree?" are always associated with imaginations, inner images, or intuitions about what it might be. While this can be promptly clarified in real terms, the imagination is far more involved in more complex questions of where from or why – where does the wind come from? Why do some trees lose their leaves in the fall? In this context, abstract-theoretical ideas and explanations build on different forms of action-based, sensory-based, and story-based thinking (cf. Schäfer, 2009):
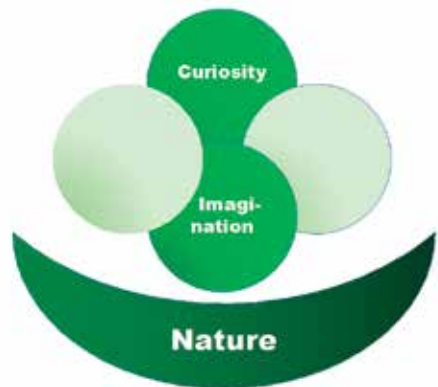
- Inner images and ideas that form in and from movements (concrete thinking). Inner images can be imagined not only as visual images, but also as auditory, olfactory, tactile or gustatory images.
- Imaginations that are formed when collecting, ordering, and constructing things (aesthetic thinking).
- Linguistically based ideas that process experienced scenes as metaphors, e.g., when children say "The earth is melting" while standing in mud. "This is like..." explanations are "perhaps the most important form of early childhood explanation of the world at a time when children are discovering the world" (Schäfer, 2009, 95). These are intuitive or naïve theorizations. Animistic ideas of good and evil stones or clouds that become snakes can be equally associated with these forms of narrative thinking. It is an „animated world that Piaget (1929) described, where the sun and moon follow young children on their walks and where stones need to be turned over so they won't get tired of looking at the same view." (Chawla 2008, 218) Then the freezing trees make the wind because they tremble and move so much. This also refers to thinking in terms of whole stories, in which children can think and express cause-effect and

basic-consequence relationships, i.e., logical reasoning in terms of form (narrative thinking).

- In the transition to theoretical conceptions, children must increasingly place their conceptions of order in a new, non-subjective context. Ideas they have acquired on the basis of concrete sensory experiences and linguistic metaphors, animisms, and stories remain the focal point. But this knowledge of the world will increasingly have to be read out of everyday contexts and embedded in scientific theoretical references – from senses to logic (theoretical thinking).

Imaginations are directed on the one hand to the possible in the real and on the other hand to the impossible, which cannot appear as hidden.[11] Crucial potencies of the human being, such as vitality, sensitivity, emotionality, inventiveness – dreams, daydreams, or wishes – enter into imagination. Some of the ways that imagination mediates between nature and language development are detailed in Part 2 from the evaluation evidence.

For example, imagination can invent stories that need to be told. An important source of imagination is imaginative play or role play, which are often nothing more than narratives in action. By the age of two, children are generally able to encounter the world in the mode of "as-if": They have the ability to ignore reality and construct an imaginative space that over-shapes the here and now.

Language-based negotiation is essential in this process, which is why this represents a valuable language occasion. Natural spaces also unfold their special prompting character here. In the forest, for example, there are many small play areas, e.g., niches, in the large space. There is less disturbance from other children, and the role plays are significantly longer and more intensive (Kirkby, 1989).

Besides, especially the abundance of shapes, sometimes strange, suggestive figures and forms, the variety of colours and materials stimulate the imagination. Suggestive shapes of, for example, rocks, tree bark, or flowers are recognized as noses, trunks, or whole faces. This corresponds to narrative thinking and physiognomic perception that is extremely childlike. There is nothing with clear play or educational purpose. The objects and atmospheres are not purpose-bound and thus have a special imagination-stimulating quality.

3. Movement and Adventure – the desire to dare

The desire for movement, which is the center of the child's personality and the focal point of his or her existence (cf. Fischer, 2010), finds optimal conditions in nature as in probably no other space of action for children. The meaningful sit-

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11   Following Popitz (2000, 92), imagination can be understood as "bringing out the hidden into the present" and "entering the hidden".

uations that can be evoked when freely acting out this childlike driving force point to a deeper connection between movement and language development.

Speech is itself a part of motoric coordination and includes facial expressions, involuntary and voluntary gestures. "Linguistic utterance comes out of movement and represents a continuation of the acting movement" (Merkel, 2010).[12] Speaking in childhood is still associated with whole-body movement for a long time. Childhood speech is accompanied by sweeping movements and is never so immobilized as in adults, where movement is on low flame.
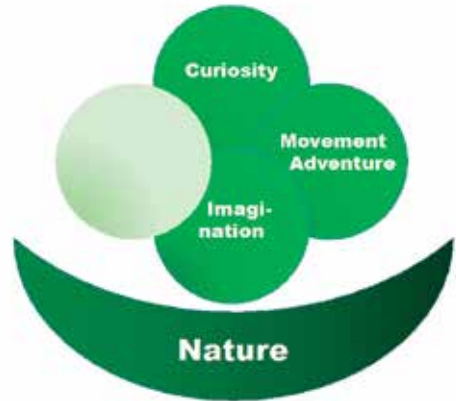
In the natural environment, the movement and language development of children from the age of 3 years foster each other in a special way. For example, children continue to expand their movement repertoire, primarily by testing their balance in many forms of movement such as running, jumping, climbing, balancing, and much more. It's all about gravity safety through the most varied stimulation possible to gain safe movement schemes that are memorized in the body. Spatial explorations and movements up and down, right and left and front and back mean enormous gains in autonomy and stability as an actor in three-dimensional space.

Already the incomparably uneven and not always visible ground in natural areas challenges the balance and represents a risk for untrained walkers.

ELaDiNa now focuses on the close link between movement and language to the effect that movements in nature are often challenging and risky.

Nature provides a huge variety of movement opportunities that are not ready-made. Balancing, climbing, jumping, hiding, crawling, sneaking, sliding, hanging, running and much more in nature is often tied to the fact that, unlike in the playground, children must actively seek out and recognize opportunities. Such situations follow a logic of their own, they inherently contain resistance that sets conditions to which one must react, e.g., to overcome them.

The child's desire for free, self-chosen movement finds an ideal space here. Intensive experiences in adventures suitable for children mean above all: To dare something, to take a risk and to experience an adventure, urges to be told. Sharing and communicating what you have experienced in the form of stories is a speech

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12 An example: a child wants to grab its teddy, but cannot reach it, so it points to it. The adult will give him what he wants, provided it is clear what he wants. But pointing is never quite clear, the word "teddy" is. "This is what makes speaking so attractive: language gives magic hands" (Merkel, 2010, 58).

occasion that often blends fiction and real experience. It also relates to the development of self-regulation noted in Figure 3, Part 1 of this handbook.

The narrated adventure is not only reflected in the well-known saying: "Whose heart is full, his mouth overflows."[13] It likewise reflects an important nexus of language development: As an implicit process, children acquire language in situations that are important for them and that are intensively experienced. Therefore, in meaningful situations things that children experience are not "things in themselves" but "things in an action context", they are "action things" (Schäfer, 2003, 10 quoted in Merkel, 2010, 57). Movement, however, was more implicit than explicit in the noted mediators between nature and language development in the ELaDiNa evaluation.

4. Sensory perception – the lust to activate all senses
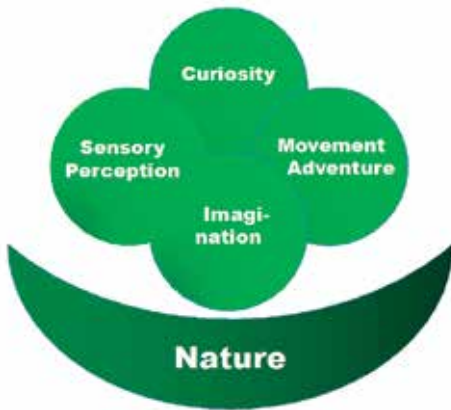
Perception via the various sensory channels represents the interface between the human being and the world, between the inside and the outside. A well-developed perceptive capacity is the basis, but also the result of children's experiences in the world. The developmental process begins on a sensory basis and language development in particular depends on and draws on the fact that children experience the world with all their senses. Particularly in the first years of life, brain development depends quite significantly on the sensory stimuli that the child perceives (Zimmer, 2019).

For children, a distinct desire to perceive can be claimed. They are predestined to devote themselves completely to perception and to open their senses without any external purpose or constraint to act. This ability of self-sufficient perception expresses itself above all in curiosity and imaginative processes and their very sensorial beginnings, e.g. when children occupy themselves for hours with the materiality of water and soil and especially with the mixing of both elements.[14]

A closer look at the various perceptual systems involves stimulation of the distant senses via the ear and eye and of the proximal senses close to the body via the skin,

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13 The original biblical quotation from Luke (6:45) is somewhat different: "For the mouth speaks what the heart is full of."
14 Children can therefore be described as protagonists of aesthetic experience (cf. Oevermann 2004; Garz&Raven 2015; Vollmar 2020).

proprioceptors in muscles, tendons and joints, the organ of vestibular balance, the tongue and the nose.

For all these systems natural spaces are ideal sensory spaces due to the diversity of their manifestations. They are characterized by an enormous sensory diversity. Since the colours, forms, materials, moods and atmospheres that can be found in nature are so varied and concise, the world of senses can be combined with the world of words in an excellent way. Words can be sensorially underpinned when the denoted things are touched, felt, smelled, taken apart, tasted, heard, observed and more.

Words are only alive as sensorially underpinned words because their meaning is more saturated and richer. "Without concepts, perceptions are inconceivable; without perceptions, concepts are meaningless," said the philosopher of the enlightenment Immanuel Kant (2007).[15] This quote also points out that a fast mapping of a word or name to an object is only the surface or the linguistic shell. Naming a new or not yet completely familiar object fulfils the need for classification and naming and children learn new words very quickly. But the meaning of a word is only developed in a longer process involving as many sensory impressions and sensory knowledge as possible.

The possibilities and stimuli of the natural world support the interplay between sensory exploration and conceptual understanding of the world. Multimodal concepts promote language development. The close connection of sensory perception and linguistic expression meets the general findings about the key factors of child activity via sensory engagement in the world and a stimulating environment (see earlier comments and Parts 1 and 2 of this theoretical handbook).

Language development in nature and the role of professional support

The key factors of early language development – sensory encounters of the world, stimulating environments, and implicit learning in meaningful situations – have been related earlier in this handbook mainly to the affordances and prompts of natural spaces on the one hand and children's developmental driving forces on the other. In other words, PLACE and children's response to it. However, the model would be incomplete if the contribution of the adults or, in the pedagogical frame-

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15   In German, the sensorial root is contained in the word for understanding and concept: "Begriff" and "Begreifen" come from „greifen", to grasp.
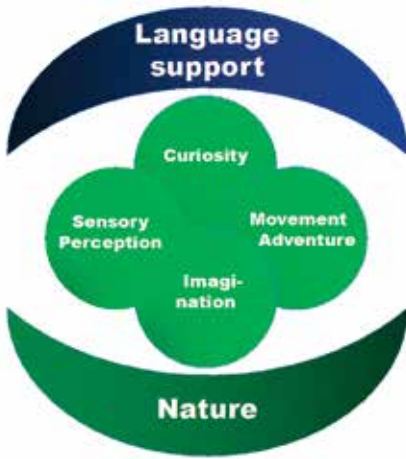
work, the teachers and educators were not also included. They play a key role and are encompassed in the PURPOSE, PEDAGOGY and PEOPLE of our overarching theoretical framework for ELaDiNa.

As the part of the environment that significantly constitutes the linguistic language context, adults have a considerable influence on a more or less successful language development of children. Obviously, the way adults react to or help initiate children's activity is crucial, even though ELaDiNa takes the sensory world of experience as a starting and reference point when linking nature with language development. But the relevant findings about language development in general (See part 1 of this handbook) remain valid also for language development situations in nature.

An ideal-typical, very schematic, but nevertheless helpful chain of actions illustrating the ELaDiNa idea is the following:

1. Children engage with the affordances of nature.
2. Teacher or educators pick up and deepen children's topics.
3. Children develop their language skills in exchange with teachers or educators through dialogues or storytelling.
4. Children are encouraged to engage further on and to use new language concepts.

Before appropriate strategies and attitudes necessary for the 2nd and 3rd steps are presented, however, the preceding or superordinated aspect of pedagogical framing in nature should be considered. It refers to possible obstacles that affect step 1. This is because the extra-ordinary character of natural spaces poses special opportunities and challenges for professional accompaniment. Thus, teachers' and educator's attitudes, knowledge, and skills are a critical factor in children getting into meaningful situations in the first place. Conversely, the attitude, lack of knowledge, and inability of teachers and educators can be very obstructive when it comes to children having valuable nature experiences. Some general points about the role of the teacher are made in Part 1 of this handbook.

The following are important notes related to the general pedagogical framing of nature activities in terms of attitude and knowledge and the general role of language support by teachers and educators.

Enabling nature experiences mindfully

- In order for meaningful situations to arise, which then open up opportunities for language-promoting dialogues or storytelling, children must be given plenty of time and free (natural) space. Hurry is out of place here. It's not about getting something done, but about engaging with something that engages you. For educators and teachers, this means accommodating the children's pace and their particular approaches and attitudes to nature as much as possible.

- Nature has its own time and place, and often this is not within one's control. For children, this could be disappointing or boring – for example, the large and exciting animals that children know from picture books, or the world wide web can rarely be seen in the local environment. Patient discovery therefore needs time, experience and an interested and knowledgeable accompaniment. Nevertheless, our evaluation findings (pp.97-98) confirm that wild animals of whatever size and shape are highly stimulating and interesting for children.

- Particularly those children whose experiences are increasingly formed by attractive toys and digital media, whose senses are shaped by the speed and event character of countless children's media, must first be introduced to nature. Nature is often strange and unknown to them. Even if natural spaces with their special atmospheres often take hold of the children, for example by creating feelings of freedom, not all children may be receptive to this initially. However, for curious discovery, imaginative play, adventurous movement and focused perception, an atmosphere that has been described as a "relaxed field" is helpful. Professional accompaniment should ensure a correspondingly relaxed framework for action by providing time and stimulating space on the one hand, and sufficient security and attention on the other.

- In cases where children appear bored with nature, it is advisable to endure this. Here, too, time is needed. Children may react bored because they are unfamiliar with natural spaces. In general, child boredom need not be understood as a pressure for the teacher or educator to immediately offer alternative specific motivational tasks or games. "Boredom is (...) nothing else than a strong curiosity in an environment poor in stimulation" (Franzmann, 2013, 207) - or in a poorly perceived environment. But stimulation from nature or from the activities of other children or the educator will usually take effect over time. The interplay between curiosity and mystery or new phenomena will occur for most children.

- Some children react with fear in nature. For them, nature is too strange, because they do not associate (positive) experiences with the forest, the field or the river, for example, or generally have little confidence in how

to negotiate it. Overprotective parenting styles, previous traumatic experiences, or negative images of nature, which have been culturally conditioned, are possible reasons for these attitudes. These children feel too little safety to allow them to explore. An adult companion can become important as both a role model for positive attitudes and a safety-giving, mindful caretaker who is comfortable in, and knowledgeable about nature and thereby act as a kind of bridge builder between the child and nature A good relationship between him or her and the children is crucial.

To convey the ELaDiNa idea of professional support for language development in nature, the following can be summarized as a guiding principle: The stimuli of the natural space become effective for children when they are accompanied in a

- gentle,
- attentive,
- patient,
- understanding and
- permissive way.[16]

Accompaniment as willing interlocutor

Especially the early stages of language acquisition depend on interpersonal conversation and joint action (see Part 1 of this handbook). Language can only be learned and improved in exchange with others. Adults, as competent speakers, are admittedly not the only ones who make up the linguistic context of the environment. Children increasingly address their speech acts to their peers as well. But before the age of 3, children are mainly adapted to linguistic communication with adults. Communicating with peers requires even more mental coordination for language-learning children (Tomasello, 2019, 186). However, peer communication tends to apply and consolidate what has been acquired in communication with competent speakers. So, what has been said so far only makes sense if it is placed within the framework of social interaction, and that means here above all the quality of interaction between children and adults. This relates to the PEOPLE

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16 Of course, permissive does not mean careless moving in natural spaces. The responsibility for assessing and possibly limiting the dangers and risks of the natural environment lies with the adults. Therefore, a precautionary look at possible dangers is part of the daily routine when going out. However, the topic of safety should not lead to adopting a pessimistic no-risk attitude aimed primarily at-risk avoidance. This would mean losing sight of the pedagogical and, by the way, legal dimension of children's autonomy and development. Precaution with a sense of proportion should be understood in such a way that children are allowed to take risks, for example in balancing and climbing. Safety comes from dealing competently with risks, not from avoiding them. This safety pedagogical maxim should, of course, always be accompanied by an open view of the space and its dangers. In order to be able to assess and better avert dangers typical of nature or the forest, arrangements should be made with experts if necessary and rules of behaviour agreed upon with the children and parents.

in our overarching theoretical framework and is also discussed in Part 1 of this handbook.

It is not only the quantity and quality of the offered language that is important, but also the ever-present relationship between adult and child. The appropriation of the world always takes place with and in relation to the interlocutors (see Merkel, 2010, 57). This applies to the first "formats of interaction" (Bruner) between child and caregiver up to learning and educational processes in middle childhood. Appropriate behaviour that promotes language is based on being a willing interlocutor for children by responding appreciatively and sensitively to children's impulses to act and speak. Such responsiveness includes being a linguistic role model and also initiating language learning situations with linguistic impulses such as storytelling.

This highlights the crucial role of professional support for kindergarten and primary school children in terms of language development. The qualification of the professional is somehow the major lever with which language opportunities of the natural environment can only become effective. Nature, in a sense, is full of words like the forest is full of trees. But to discover and use these words, qualified adults are key. In contrast to the family context, where intuitive parental didactics support language development, educators and teachers should act in a language-supporting way that is as reflective as possible.

Reflexivity refers to one's own language-promoting attitude and behaviour, the necessary language-related knowledge and language-promoting skills. This addresses three dimensions that are essential to the ELaDiNa model of professional support:

Knowledge of language, language acquisition and language promotion

For successful professional language support, it is essential to have a well-founded idea of:

- what language actually constitutes,
- the extent to which language constitutes the human being,
- that language arises from communication,
- what characterizes the stages and milestones of language development,
- the advantages of an integrated, holistic approach of language promotion,
- how second language acquisition works,
- what role curiosity, imagination, sensory perception, movement and adventure play or,
- what language opportunities natural experiences and natural spaces offer.

Part 1 (Theorising towards a model of early language development in nature) in this handbook and earlier sections of the generic model provide important references and further reading for answering such questions.

Reflection of the own language use

The awareness of one's own language behaviour is an important prerequisite for the acquisition of language-supporting behaviour. Initial reflection questions for this could be the following:

- How clearly and intelligibly do I speak?
- How do I accompany activities?
- Do I give many instructions?
- Do I ignore questions from children?
- How do I react to incorrect speaking of children?

Exercise and practice of the language supporting approach

ELaDiNa ultimately also aims at the practical application of language-supporting behaviour and methods. The way in which knowledge and skills are developed and how the transfer into practice can be supported are essential issues of the ELaDiNa concept. Since implementation of effective language development support in nature (making the knowledge and skills one's own and transferring them into one's daily practice) cannot be done by reading alone, practical qualifications for teachers and educators for the implementation of the ELaDiNa model have also been established through the training programme and practical handbook. This follows the recommended sequence of professional development advocated by Sims et al (2022: 31) and is illustrated in Figure 5, Part 2 of this handbook.

A detailed experience-based concept with practical exercises and transfer ideas is available with the ELaDiNa training programme supporting the real situation in the practical field of work. Action-oriented tasks, practical exercises, role plays, theoretical inputs, video analyses, reflection units, practice focusing with pocket cards and own videographed practice are suitable forms of teaching and appropriation of knowledge and skills. The concept brings together two structurally different spheres:

Training practice, which is relieved of the constraints of pedagogical practice and opens up a productive sphere to deal with new contents and to reflect experiences.

Work practice, in which there is always real pressure to act, and real children are addressed. Here, the ELaDiNa content that has been developed is to be tried out and the experiences documented.

Strategies and methods

The following suggestions illustrate basic principles of language education and support integrated into everyday life. They relate to teachers and educators. The action strategies and methods are intended to help grasp the opportunities offered by natural spaces to promote children's language development. Possibilities can become reality.

Language support and outdoor learning are not understood here as additional items in a busy daily routine that is limited in time and/or only takes place with certain children. Rather, language education in nature is lived as a universal principle and is seen as a cross-sectional task that is practiced by all participants in every situation that arises in everyday life.

With the goal of reflecting on one's own language behaviour and expanding language-promoting competencies, key language-stimulating strategies are explained below.

Adopt a fundamental language supportive attitude

In order to create a good conversational atmosphere that invites children to tell their stories and talk to each other, various communicative considerations i.e., body language and also mental factors i.e., consciously conducting a conversation in a language stimulating way play a decisive role. Below are important aspects that must be actively established by the dialogue partner in order to create a suitable positive atmosphere that can also stimulate a trusting relationship. This attitude expresses the willingness to accept the conversation and to turn fully towards the child. At the same time, it signals openness to all kinds of contributions to the conversation. Children feel safe and can dare something. Regardless of a child's current language level, this should encourage him or her to enter into dialogue and participate in a conversation.

- *Get down to the child's eye level.*
- *Maintain eye contact.*
- *Pay full attention to the child.*
- *Assume a facing posture.*
- *Use affirmative facial expressions.*
- *Listen, let the child speak.*
- *Ask questions with interest.*
- *Radiate the joy of communication.*

Follow the child`s lead - establish joint attention

Children particularly enjoy a conversation when the common focus of attention is on an object or topic that has meaning for the child. In order to establish this situation, the dialogue partner has to step back with his or her own ideas and fully engage with the child's interests. In order to find out the child's topics, an observing but actively participating attitude is necessary at first. If the child's topics are then given time and space, the motivation to speak can be significantly increased. Premature hints by the conversation partner on certain topics and thus leading the conversation are less effective. Rather, the child experiences encouragement and reinforcement when his or her process of thinking and acting is followed, and he or she is clearly in charge of the conversation. Accordingly, this strategy is often the first step towards entering into a dialogue.

- *Observe, wait, listen ("owl-principle").*
- *Perceive and focus on the child's interests.*
- *Giving up one's own leadership and following the child.*

Parallel-talk and self-talk

Not only to acquire word meaning, but also to learn specific linguistic structures, the verbalization of actions is of great importance. Long before children actively speak their first words, they already develop an understanding of words, for example, by handling an object and repeatedly hearing a certain sound chain (the corresponding word), which they can then associate with the object. This process of associating what they hear with concrete objects or situations can only succeed if the dialogue partner links action and language congruently. Congruence means that what is said must relate exactly to the respective action, so that unambiguity is created. This strategy is particularly suitable for children who, due to their age, do not yet speak much actively or for children who are at the beginning of their second language acquisition and have so far communicated exclusively in their first language. If both one's own actions and those of the child are described by language, the child has the chance to learn new words and language structures of the target language.

- *Accompanying the child's actions with language.*
- *Speak about your own actions.*
- *Use this strategy especially when the child is attentive.*

Confirm, repeat and expand the child's utterances

The child receives important reinforcement when his or her utterance is first acknowledged, and this acknowledgement is put into words. A simple "Oh yes." or "Exactly." as a reaction from the conversation partner initially gives the child val-

uable recognition for his or her statement. If then the dialogue partner repeats what has been said in a meaningful way, this further underlines the fact that the child's topic is taken seriously. For the further course of the conversation, an impulse can be given by taking up the child's topic and adding further information or a new aspect. The right dose is important here, because too many additions might again lead the conversation too far away from the child`s interest. The child could lose interest in the conversation because the dialogue partner becomes the leading person in the conversation.

- *First of all, find words to confirm the child's utterances and repeat what has been said in the sense of active listening.*
- *Add one more piece of information or expand with a limited / manageable number of new considerations.*
- *When making additional comments, pick up on the topic and interest of the child.*

Corrective feedback

Learning to speak is an active acquisition process in which children continuously refine and improve their linguistic competence by trying things out and receiving feedback for it. Independently, they extract e.g., linguistic rules from what they hear, and it happens that they apply a newly learned rule in contexts in which the learned rule does not fit. These so-called productive errors are not actually errors, but rather they show a child's level of competence and point to the next step of development. This is exactly where adult responses as corrective feedback comes in. Through corrected repetition of the child's utterance, the error is not explicitly pointed out, but the child is indirectly shown how the utterance would be correct. With this form of correction, one stays completely with the child's statement without taking away the child's joy of speaking by making him/her aware of an inadequacy. Due to the highly sensitive speech perception and processing in childhood, these indirect hints are sufficient but absolutely necessary in the normal process of language acquisition.

- *Repeat utterances with correct pronunciation and grammar.*
- *Repeat incomplete sentences completely.*
- *Use this strategy repeatedly but sensitively.*

Name unknown words frequently

Words and their meanings must be securely stored in the mental lexicon so that they can be recalled in any required situation. Secure memorisation is supported when dialogue partners allow intensive exploration with all the senses and accompany this process linguistically. Many repetitions are helpful for memorising

a new or unfamiliar word. Each word must be heard 60-80 times (and experienced in different contexts) until it can be actively used.

- *Repeat new, unknown words frequently and meaningfully in different contexts.*

Use appropriate and rich language

Adult language use can sometimes be very economical in everyday life - out of habit or for other reasons such as stress or challenging situations. The most necessary information is then conveyed with little effort and as briefly and succinctly as possible. This can be efficient and reasonable, but it is not appropriate for the professional context described here. Children who are in the middle of the language acquisition process need adults to act as role models using rich language by finding the most appropriate words and describing things in a differentiated and detailed way. Precise word choice and explicitness in formulations are just as important as detailed descriptions in grammatically complete sentences. Instead of "Make that in there!" is a formulation such as "Put the branch in the bird`s nest." much more precise due to the detailed explanation a much better language model. This literal precision strategy is especially important for children on the autistic spectrum.

- *Use well-formulated, detailed language.*
- *Avoid abbreviated statements.*
- *Use maximum strategy of verbalisation instead of minimal strategy.*

Turn taking - pay attention to reciprocity in dialogue

Children do not learn language and speaking by just listening, but they need to be able to try things out, to use language actively on a frequent basis and to receive constant feedback. Only with sufficient practice, do they have the chance to expand their linguistic competencies further. Dialogue partners must therefore pay attention to a balanced or larger share for children's contribution to the conversation and offer them the necessary feedback in the dialogue that they need to expand their competences and will to speak. If a dialogue is kept going with all language-stimulating means, several changes of speaker become possible, which set diverse learning processes in motion.

- *Pay attention to reciprocity in dialogue.*
- *Create several changes of speaker.*
- *Pay attention to a balanced proportion of speech or increase the children's share of speech.*
- *If necessary, take more of a back seat.*

Focus on quiet children

Children who are very eager to speak receive frequent attention and correspondingly more linguistic support due to their high level of initiative in communication. They actively demand their practice opportunities. Quiet children may need the initiative of dialogue partners who offer themselves for a conversation so that they also can experience sufficient language learning opportunities.

- *Recognise which children are more or less sociable and communicative.*
- *Take initiative and actively seek contact with quiet children.*
- *Avoid imperatives*

The child's linguistic development requires a conversational partner who supports the child's activity in the process of language acquisition and accordingly promotes a high level of participation and independence of the child. In contrast instructions, i.e., especially imperatives such as "Go over there!" or "Leave it, we discussed this!" do not increase a child's autonomy or independent thinking and acting. They do not invite children to talk to each other and to negotiate things. If the child is often only instructed to do something or not to do something, this can have an inhibiting effect on language development.

- *Encourage children to think for themselves instead of issuing prohibitions.*
- *Allow the child to come up with his or her own ideas and to act independently.*
- *Discuss consequences with each other.*

Asking questions

Often it is mentioned as being conducive to language development, if one use asks open rather than closed questions. However, this strategy is not universally valid and must be considered in a more differentiated way. Every question requires an answer and thus places a demand on the child. Children with low language skills may not be able to meet these demands because they cannot formulate an adequate answer. They may feel incompetent and lose the courage and self-confidence to try out their language skills - and fall silent. In general, dialogue partners should reflect on how often and how many questions they ask in the course of a conversation. In contact with less linguistically competent children, strategies should be used that accompany the child linguistically rather than just questioning or interrogating him or her. In this case alternative questions are more helpful because they make it easier for the child to actively answer by saying two alternatives. Children who are eager to speak tend to benefit more from open-ended questions, as those questions can have a language-stimulating effect on these children.

- *Use questions in a measured way because they are not stimulating for all children.*
- *Ask fewer questions and better accompany children more linguistically.*
- *Ask open rather than closed questions.*
- *Use alternative questions for insecure children.*

Telling stories – stories by children and for children

As discussed earlier and Parts 1 and 2 of this handbook make clear, natural spaces offer not only many occasions for speaking, but also many occasions for narration. Natural spaces can be full of stories - they should be told! From the perspective of child development, the age between four and ten years shows an enormous receptiveness to narrated stories. Often, children have also a great desire to tell their own stories, so that four-to-ten-years of age is also the true storytelling age of childhood.

- Children should be encouraged and supported when telling their own story, that is, when they talk about what they have experienced, e.g., their told adventure. Giving space and time is important here. Often, they have to get used to coherent storytelling first and need confirming adults. It is not only the past experience itself that constitutes the child's experience. The narrative organizes the past and enables the child to conceptualize himself and to reassure himself before others. Engel (1999) calls this development of a "sense of self" through telling one's own stories.

- Storytelling itself has a very interesting effect on the development of language. This is especially true for telling imaginative stories to the children, which, however, needs to be practiced. Thus, stories always offer new "language material": new terms or new grammatical constructs. When they are told, this stands out from the everyday language use of a dialogue, for example - but without being detached.

- Storytelling is on the one hand similar to a conversation because of its liveliness, on the other hand it exceeds everyday language by introducing new, unusual words and containing more complex sentence structures and sequences of actions. In this respect, it can form a bridge to non-ordinary language and to written language, because it can be additionally supported gesturally. Free storytelling thus requires much less on the part of the child's language ability than reading aloud. New language material and whole scenes of the plot can be made more understandable by gestures and gestures. By gesturing at characters, symbolizing objects, movements, or scenes of the story with hands, feet, and all kinds of body language, storytelling is brought closer to play. In general, this also accommodates children's imaginative activity, which is often

very attached to objects that can be perceived by the senses, i.e., it needs sensory anchors. With mimic and gestural support, the narrator reaches the children more strongly through sensory communication channels - mostly the sense of sight - and draws them more easily into the arc of suspense and the course of the story. Through such playful and acting narration, even those children can follow a longer text who, for example, lose the desire to listen quite quickly when read aloud.

- To stimulate children's telling of what they have experienced and of invented stories, a storybook can be created together with the children when back in the classroom. This also represents a bridge between orality and writing. The book can be used to collect stories from nature explorations or invented imaginary stories. Such a book can develop a momentum of its own not only when collecting stories, i.e., when constructing them. It also offers the children storytelling opportunities when they turn the pages, if it contains photos, painted pictures, or dried plants, for example, and the stories can be reconstructed for the children. It helps to bring the outdoor experiences and motivations back inside.

- In order to establish the theme of storytelling and the stories themselves in a striking way, fixed figures - such as a colourful hedgehog or 'Skarlett the squirrel' - can be established that carry or run through the stories (cf. Merkel 2010, 169). This can be more connective for the children and provide a series of links between the individual stories.

- For regular trips into nature, it is possible to turn the path into and through nature into a story, i.e., sections of the path, such as certain lanterns, trees, roots, clearings, or forks in the path can become settings for a coherent story that is walked through again and again. This idea also helps very imaginatively to order the space and to orient oneself in it.

Part 4

Conclusion

As Part 1 in this handbook pointed out, early language development is critical to personal, social and academic progress of children, and nature has been extensively demonstrated to have multiple benefits for children, yet there has been very little attention paid to the role that natural environments might play in supporting early language development. The evaluation evidence from this project (Part 2) addresses this gap in knowledge and suggests that there has been a positive impact on partners, teachers and children participating in the ELaDiNa project. An anticipated and much desired outcome was that the developed generic model (Part 3) and training programme (see ELaDiNa project website) would continue to impact others beyond the life of this project. The quality of the training programme has already been demonstrated by positive evaluations. The quality of our generic model is underpinned by a rigorous development process, and it stands alone as an intellectual output of the project.

Was the project implementation successful?

As Part 2 of the handbook shows, the partners in the project were generally satisfied with the way that the proposal had unfolded in practice. The evaluations from associate partners of the training events were broadly positive. The implementation of the project, albeit disrupted by the COVID-19 pandemic, was successfully completed, and was positively evaluated by partners and associate partners, the teachers. We had adopted a socio constructivist approach to the project recognising that that expertise was not something that could be 'delivered' but would be developed between partners, associate partners, and their settings. Many of the evaluation activities were thus designed to be dual purpose and were intended to contribute to the process of training as well as our understanding of the topic. For this reason, relevant aspects of the evaluation process are also reported in the ELaDiNa Training Programme.

What was the impact of the project?

The impact of the project on participating teachers included raising their awareness of effective strategies and locations in early language development in nature. These impacts are discussed below **within the framework of Purpose, Pedagogy, People and Place** and our research questions.

Purpose

RQ1: What were teachers trying to achieve in early language development in nature?

Most teachers joining the project expressed a strong interest in language development and nature and two thirds of those responding to both surveys believed that being outdoors contributed strongly to language development. Clearly, ElaDiNa has worked predominantly with teachers who were already committed to supporting children's language development in nature. Nevertheless, there was a slight strengthening of this belief between the pre- and post-intervention questionnaires.

Teachers' main aims in the early stages of children's language development seem to be about encouraging speaking and listening. These aims remain important later in education as we have seen in Section 1 about language development milestones and according to Cummings' (1999) framework in which basic interpersonal communicative skills underpin academic language that enables greater conceptual understanding across subjects and an increasingly sophisticated grasp of the rules of grammar, semantics, and syntax. Teachers in the primary schools showed a greater breadth of language development aims in line with expected developmental milestones. They also tended to embed language development aims within other subject areas to a greater extent.

Many teachers reported that their aims and practices were similar inside and outside the classroom. However, some also acknowledged an effect of being outdoors that made it a "bit more partner-like and cooperative" than inside the classroom. Aims were often more flexible capitalising on unexpected opportunities in the natural environment, perhaps due to a less pressurised context outside compared to inside the classroom (Hackett et al., 2021).

RQ2: Were teachers more thoughtful and/or targeted about their practice in early language development in nature after participation in the project?

The answer to this question is without a doubt, yes. Several teachers reported that they had become more aware of their own and children's language through their participation. They were more inclined to listen and consciously support children's needs to express themselves outdoors (Hackett et al., 2021). In the baseline video data, teachers mostly showed us examples of Basic Interpersonal Communicative Skills with fewer instances of Cognitive Academic Language Proficiency. The range of language development aims shown increased following participation in the project, perhaps as teachers became more attuned to language aims and affordances in nature. The most common aim seemed to be to extend conversation through questions. This relates to sustained shared thinking techniques recommended to support communicative language skills by Siraj-Blatchford (2009). As

Miller (2007) notes, children are allowed to communicate differently outside the classroom, stimulating a desire to speak, with adults providing words to help express their emotions and ideas.

A focus on specific vocabulary and academic language was the next most prevalent purpose, indicating that language as the foundation of other learning was also being supported in outdoor contexts through adults supporting comprehension and extending vocabulary and grammar capabilities (Norling and Sandberg, 2015; Streelasky, 2019) with children's active participation (McVittie, 2018; French, 2004). Communication and dialogue and supporting a child's interests were also common, indicating that sustained shared thinking (Siraj-Blatchford, 2009) was a major strategy in teachers' practice.

Taken together this evidence suggests that teachers have become more intentional in their support for a variety of children's language development aims through rich nature-based experiences (Moffatt, 2016) and by providing sensitive contingent adult support (Norling and Sandberg, 2015).

During the second training teachers were able to correspond natural environment features with specific language development aims. Learning intentions encompassed describing words for scientific observations (French, 2014), storytelling, and games stimulated by the various environments (see Appendix 5 and Appendix 6).

These particular training exercises appear to have built successfully upon the OLE survey which had gathered teacher's reported use of natural environment features to support children's language development. Teachers' explanations of activities using natural features in the survey enabled us to appreciate the internal driving forces and external mediating factors that supported language development within natural environments. These included embedding language development within other subject areas, utilising the curiosity and imagination engendered by creatures in their natural habitats, and providing calm and flexibly interpreted spaces for more creativity, thinking and dialogue.

Completion of these evaluation/training tasks raised teacher awareness of aligning purposes to places and their affordances.

Pedagogy

RQ1: How did teachers support early language development?

Teachers mostly reported that they used the same pedagogy inside and out for language development. The initial set of videos showed that there was a range of methods used with some teachers favouring allowing children to talk amongst their peers or self-narrate their activities, pursuing their interests independently. This corresponds to studies that have found that natural environments in and of themselves tend to motivate children to communicate as they stimulate curiosity and wonder at natural phenomena (Canning, 2013; Moffatt, 2016; Richardson & Mur-

ray, 2017). At the other end of the spectrum of pedagogical strategies, some teachers were doing most of the talking and asking closed questions. While this may not follow the contingent response that Norling and Sandberg (2015) recommend, whereby adults principally intervene to help children express their own feelings and responses to nature, greater adult input may be appropriate when supporting specific acquisition of academic vocabulary through hands-on Science activities, as French (2004) suggests or through adult-produced identification guides as in Bucholz and Pyles (2018). There was evidence of teachers' sensitivity to progression in the sorts of pedagogical support employed with older children.

RQ2: Were there changes in pedagogical language stimulating strategies during the course of the project?

At the end of the project a similar number of teachers felt that they used the same pedagogy inside and out. However, teachers demonstrated how they had used strategies suggested in training within their own practice and showed an extended range of pedagogical strategies in their practice. This process of applying strategies in their work with children relates to the **embedding** stage of professional development (Sims et al., 2022). The teachers appreciated more practical hands-on training involved in the **teaching of techniques,** but they also received theory and evidence input to provide **insight** into and **motivation** why these techniques might be successful. Feedback from evaluation tasks and meetings with national project partners provided prompts for reflection and action planning alongside invitations for self-appraisal and trialling techniques in their working context. Our iterative project design enabled these aspects to be repeated throughout its course, enhancing the likelihood of sustained improvement (Sims et al., 2022).

There was more evidence of teachers directly supporting language development in the follow up videos. The most common pedagogical strategy in the follow up videos was active communication between children and teacher. This was characterised by exchanges which were usually founded on children's interest and involved a balance of dialogue between child and adult. Contingent responses to children's exploration supported sustained shared thinking (Siraj-Blatchford, 2009), where the teacher built upon children's lines of thinking and took them a little further in their language or conceptualisation.

The next most commonly observed strategy was adult-led highly structured activities where the teacher was sometimes the main speaker with specific goals to achieve. Structured teaching such as storytelling and rhyming in natural environments and hands-on experience and interpretation of scientific phenomena in nature can positively influence language development (Bucholz and Pyles, 2018; French, 2004; Moffatt, 2016). Directive approaches may be more compatible with older age groups where there are other subject-specific goals to achieve but outdoor activities should always allow space for the child's own suggestions and speculation to be voiced.

The most used language stimulating strategies that were introduced at the first training event were "following the child's lead", "repetition and confirmation", and "asking questions". The first and third strategies capitalise on children's natural interest in and curiosity about the natural world and their "quest for existential knowledge about both their environment and themselves (as) a core driving force in their lives" (Gurholt & Sanderud, 2016, p.19). The second strategy is an effective method of building upon children's own language by positively affirming their interests, reflecting back their expressed communication using appropriate words, pronunciation, and grammatical forms, and adding relevant information. The strategies are all examples of sustained shared thinking (Siraj-Blatchford, 2009), demonstrating that with sensitive alignment of adult input, the driving force of children's curiosity in natural phenomena promotes language development.

Based on tried and tested methods in their own practice, thirty-seven practical language developing activities were submitted by teachers involved in the project to contribute to the practical handbook. In addition, the Training Programme includes activities that could be adapted for use with children.

People

RQ1: What roles did adults and children play in language exchanges in natural environments?

In the early videos, there were quite a few examples of adults standing back and allowing children to talk amongst themselves and also some where the adult was doing most of the talking. Tovey (2014), reflecting on the work of early pioneers of outdoor play and learning in young children, notes that adults played a significant role in their philosophies of early years education. Susan Isaacs, for example, argued the case for "meeting" children's spontaneous enquiry so that they can continue and extend investigations stimulated by their environment; while Froebel considered that close observation and contingent support for children's thinking, enabling them to make connections between experiences, offered important adult support for their development. Examples of such alignment of child interest and adult extension of their language and thinking are now often referred to as "sustained shared thinking" (Siraj-Blatchford, 2009). Montessori, in contrast, placed greater emphasis on children's competence and advocated that adults intervene to a minimum extent, allowing children the space to choose and explore. However, interpretation of what "minimum intervention" might look like varies hugely on an individual and cultural basis and may lead some practitioners to adopt a passive supervisory rather than an active supportive role. Tovey (2014) suggests that thinking carefully through these issues can help teachers in deciding the delicate appropriate balance between adult support and children's freedom. In ELaDiNa, these ideas were played out in the examples shown in videos and adoption of strategies appeared to some extent to be influenced by wider cultural factors. Nevertheless,

every educator can profit from examining their personal values in shaping their practice (Waite, 2011).

RQ2: Did these roles change during the course of the project?

Adult's role

We found that the most common role of adults, which constituted 41% of the examples in the second set of videos, was to lead an activity and at the same time encourage participation (Ad3). The next most common role was to follow a child's interest (Ad2) which made up 31% of the examples in videos. Videos where adults either dominated the activity and speaking (Ad4) or did not take part in children's activities (Ad1) were rarer and constituted 15% and 13% in the second set, respectively. We also observed differences between the three countries.

In many of the baseline videos submitted one year earlier, teachers were standing back observing a child's or several children's interactions and conversations; although we cannot claim for certain (teacher roles in the baseline videos were not analysed quantitatively), this may indicate that teachers changed their approach to a more active role during the ELaDiNa project. In the final survey, all participating teachers said that their practices in supporting language development had changed because of taking part in the project; they stated that they had increased their awareness and understanding of how language develops and that they listened more to students. This change is likely reflected in the active roles of adults observed in the second set of videos.

In many of the later videos we could observe examples where teachers interact with one or several children in a manner which could be explained as sustained shared thinking (Siraj-Blatchford, 2009). This concept is defined as:

> An episode in which two or more individuals 'work together' in an intellectual way to solve a problem, clarify a concept, evaluate activities, extend a narrative etc. Both parties must contribute to the thinking, and it must develop and extend the understanding (Siraj-Blatchford et al., 2002a:8).

The capacity for sustained shared thinking has been claimed to be essential in Early Years education and characteristic of high-quality settings (Siraj-Blatchford, 2009). This practice of "meeting" the child (Tovey, 2014) and respecting their interests was evident in many videos and permitted children more equal share of the resultant dialogue.

Children's role

At baseline, children most commonly followed their own interests independently. Dialogue with peers was often longer in duration than conversations with adults, but it was unclear whether their language capabilities were extended by these

exchanges, unless this was explained in the commentary. Adult questioning often tended to elicit only a short response from the children. However, later videos showed more prolonged conversations between children and adults and in many cases, that children were the initiators and equal contributors in the interaction. This aligns with other research that has shown increased autonomy for children in outdoor contexts through self-motivated curiosity (Krnel, 2018; Bregant, 2010). Changed relationships outside the classroom were reported between teachers and their pupils and may also have resulted in an increased willingness on the children's part to enter into longer conversations and offer ideas in their interactions with the teacher rather than to look for the "right" answer (Hackett et al., 2021).

Place

RQ1: What views did teachers have about the value of nature for language development?

RQ2: Were teachers sensitive to the opportunities presented by the natural environment for language development aims, both general and specific?

Both these questions are addressed below.

At the start of the project, all participants were already convinced that being outdoors contributed to children's language development. Two thirds responded that they very much believed so and the remaining third said they had a moderate belief that this was the case. The results were essentially unaltered at the end of the ELaDiNa project. There was also from the outset, a great belief in the importance of the location and/or qualities of the outdoor environment, and this belief seems to have been strengthened during the project. Teachers moved from a global view of nature as something generally beneficial to a more refined understanding of nature's specific contribution to language development.

In much of the outdoor education literature, the different qualities of nature are not discussed in detail; one could get the impression that what is important is merely that education takes place outside. Partly for this reason, we were interested in finding out how teachers valued different qualities or features in nature for their ability to stimulate language development in an educational setting. The roles of various features in nature have also been described as affordances, the relationship between an individual and the environment (Gibson, 1979/1986, Heft, 1988; Kyttä, 2002, 2003). The features that stood out as most beneficial for language development according to the teachers were: Sticks and branches, Wild animals, and Sand and sand play. The teachers' accounts relative to these features have been described earlier. It is hardly surprising that such features rank high among the teachers considering existing evidence for the importance of "Loose parts" in outdoor education (Flannigan and Dietze, 2017; Sutton, 2011; Gull et al., 2023). Loose parts have been defined as "open-ended, interactive, natural and manufactured

materials that can be manipulated with limitless possibilities" (Gull et al., 2023, p. 48). In agreement with the result from our OLE survey, loose parts in outdoor learning environments have previously been described to be beneficial for various aspects of children's development, including language use (Flannigan and Dietze, 2017, p. 53).

David Sobel has described what he calls Children and Nature Design principles to be used in connection to play and learning outdoors. Although these were created with the main purpose of increasing the interaction between children and nature in general, they are also valuable in discussing language development in the early years. Sobel's design principles are Adventure, Fantasy and imagination, Animal allies, Maps and paths, Special places, Small worlds, and Hunting and gathering (Sobel, 2008). Sobel's explanation of why these design principles are particularly valuable shows many similarities to the teachers' descriptions why they find certain features valuable for language development in the OLE survey. To give just one example, Sobel writes:

> Young children live in their imaginations. Stories, plays, puppet shows, and dreams are preferred media for early childhood. We need to structure programs like dramatic play; we need to create situations in which students can live the challenges rather than just study them" (Sobel, 2008, p. 24).

This quote echoes participants' views of the importance of stimulating children's fantasy and imagination, as well as their direct involvement, for language development to take place.

In summary, teachers shared examples of how they used nature with more precision. It is often the case that the outdoors is assumed to be homogenous, simply the opposite to being indoors. Selecting from different natural environment features, teachers focused on how they use these in their practice, and in the process of paying close attention, they have become more attuned to what they find especially valuable. Their comments have also helped to clarify the range and kinds of language that can potentially be developed in specific situations.

The different data sources in the evaluation of the ElaDiNa project enriched our knowledge and understanding of the driving forces and mediators that are effective in early language development in nature. This, coupled with a review of existing evidence, strengthened the development of our generic model and other intellectual outputs from the project. There were, however, a few issues that were challenges in the project's implementation or limit its generalisability.

Limitations

Project length and funding

The COVID-19 related delay to the start of activities within the project caused slippage in its timeline and this impacted on the possibility of a third video data collection stage after the training in Sweden. It also increased pressure on staff amidst other competing priorities that may not have coincided if it had been possible to carry out the project as proposed.

The teachers in settings did not receive funding for their work in collecting data or attending training events although their contribution to the success of the project was significant.

Assigning hours to different intellectual outputs for project timesheets when these were often overlapping and integrated was tricky.

Language issues in video analyses

It is difficult to recognise grammatical mistakes and subtleties of interactions in another language and this made it challenging to appreciate the applied language learning strategies of the teachers in the videos. Our cross-cultural study incorporated a level of uncertainty associated with coding of videos without a full commentary explanation, because non-native speakers had limited awareness of what was being said. For this reason, our results should be interpreted cautiously. Egilsson, Dockett and Einarsdóttir (2022) discuss the use of interpreters in cross-cultural research with its potential advantages for inclusion and challenges in unintended modification of messages. We had originally proposed that partners in each country would provide translated transcripts but neither the funds nor time available made this a viable option. Verbatim transcripts would in any case not necessarily enable the context and tone of the spoken word to be understood. Our response to this challenge was that videos were discussed at a national level as part of the training element of the project, so that native speaking partners could pick up on nuances within interactions. We also asked the teachers in each country to provide a written commentary in English that interpreted the videos from their perspective. However, where these were very brief or missing, we had to rely on the balance of speaking, intonation and visual evidence when they were not in our language. Providing feedback reports meant partners could review and comment on our interpretations.

Comparisons between different countries are based on small numbers and therefore generalisability is limited. Nevertheless, we believe it is important to differentiate between countries at times in order to show how cultural and educational

systems may impact on the adoption of policy and practice. This is especially important to highlight in a cross-cultural project and when offering a generic model for wider application.

Implications of ELaDiNa

We hope that the theoretical handbook, with a developed generic model within it, will be a valuable resource for future work in policy, practice, and research in this under-recognised and under-researched field of early language development in nature.

The ELaDiNa project has shown that children's wellbeing and their engagement with learning using language are supported by spending time in nature and having many authentic opportunities to speculate about the world around them. In line with the few previous studies of language and nature, a desire to communicate was promoted by children's involvement in rich sensory experiences, and their vocabulary was expanded to communicate their ideas and feelings about nature. Interactions between adults and children became longer, more balanced and productive. Teachers supported children's language development by capitalising on children's interests through dialogue that respected children's ideas while extending their thinking and language skills. Strong evidence of beneficial outcomes for children's development and education from outdoor learning and links between language development and natural environments noted in our project evaluation prompt us to suggest three main messages from ELaDiNa:

1. **Nature has huge potential to support the foundational educational pillars of children's wellbeing, basic interpersonal communicative skills and cognitive academic language proficiency to enable success in school and beyond. Some natural features can be provided in any setting.**

2. **Key internal mediators for language development in nature are multisensory whole-body experiences, which stimulate curiosity and imagination in children, providing strong motivations for their language use. These impulses arise in response to the diversity and changes witnessed in nature.**

3. **To maximise these opportunities, sensitive supportive strategies by adults are needed to scaffold such naturally occurring motivations to speak, listen and learn in nature, including giving space and time to children and affirming their interests through extended mutual conversations contingently introducing relevant terms and construction.**

Implications for policy

Many countries are struggling post COVID-19 with widespread developmental delays noted in schools as children's early education was substantially disrupted. These include issues associated with social skills, language development and well-being, all of which are supported by time spent in natural environments. This theoretical handbook brings together key issues that underpin successful approaches and provides a clear evidence-based rationale for policymakers to introduce more opportunities for early language development in nature. The generic model (Part 3) distils these ideas and evidence into a succinct format to inform policy. The training programme and practical handbook then offer ready access to the applied means to upskill and inspire teachers working with children aged 3 - 7 years in these matters.

Implications for practice

Teachers in the project adopted more active roles in their pedagogical support for language development, and it is clear that specific training in early language development in nature can help teachers negotiate a careful balance between freedom and intervention outside the classroom. Teachers were also appreciative of the energising role of the natural environment, which provides endless stimulating situations to encourage children's language. Our evidence provides some useful guidance about what features to prioritise when developing school grounds especially where access to nearby nature is limited. In urban school environments with predominantly asphalt playgrounds, a sand tray or pit and importing piles of sticks, branches and logs can offer many opportunities, especially as these features are often linked with creating animal habitats. We have established that wild animals appear to be a powerful source of fascination and language stimulation for children. Our study also shows that these natural resources can be provided no matter what the outdoor environment adjacent to the setting is like. The practical handbook and training programme mean that settings and practitioners are able to engage rapidly with developing their own provision in this important area of children's development through resources, which have been tried and tested.

Further research

Although the evaluation of this project had elements of research, there is still a marked lack of evidence in this vital area of children's development and detail about the role that nature can play in enhancing it. In the wake of the recent pandemic and its aftereffects on the education and wellbeing of children, the need for strategies that combine health-promoting environments and addressing delays in language development caused by social isolation (Tracey et al., 2022) is urgent. More research is needed to continue to shed light on the interaction of pedagogies

and natural affordances for language development. Collaborative research involving early years language specialists and outdoor education researchers could potentially yield many more valuable insights.

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Appendices:

Evaluation tools

APPENDIX 1: Baseline and post survey

APPENDIX 2: Outdoor Learning Environment (OLE) questionnaire

APPENDIX 3: Training evaluation questionnaire

Data summaries

APPENDIX 4: Appreciating Interactions – video reflections

APPENDIX 5: Associations of places and purposes for language development activities

APPENDIX 6: Outdoor learning environments artworks

Evaluation tools

Appendix 1:

Revisiting your thoughts about Early Language Development in Nature

1. Questions about You

Your name

_____

_____

Your role/educational qualification

_____

_____

Describe your setting, e.g. name and type of school, location (inner-city, suburban, rural), age range of children, total number of children

---

Your Country

☐ Germany

☐ Slovenia

☐ Sweden

Years in teaching

☐ Less than 1 year

☐ 1-5 years

☐ 6-10 years

☐ 10-15 years

☐ 16-20 years

☐ More than 20 years

Your personal interest in/involvement with nature. Please explain your answer.

☐ Not interested/involved

☐ Slightly interested/involved

☐ Moderately interested/involved

☐ Very interested/involved

Your personal interest in language development. Please explain your answer.

☐ Not interested

☐ Slightly interested

☐ Moderately interested

☐ Very interested

2. Your current practice

What ages are the children that you are currently involved with as a teacher? You can choose more than one alternative.

☐ 2-3 years

☐ 3-5 years

☐ 6-7 years

Currently, how large a percentage of the total time you spend with the children takes place outdoors?

	0 %	1-10 %	11-20 %	21-30 %	31-40 %	41-50 %	51-60 %	61-70 %	>70 %
Spring	☐	☐	☐	☐	☐	☐	☐	☐	☐
Summer	☐	☐	☐	☐	☐	☐	☐	☐	☐
Autumn	☐	☐	☐	☐	☐	☐	☐	☐	☐
Winter	☐	☐	☐	☐	☐	☐	☐	☐	☐

3. Your beliefs about early language development outdoors

Do you believe being outdoors contributes to children's language development? Please explain your answer.

☐ Not at all

☐ Slightly

☐ Moderately

☐ Very much

_____

_____

Do you believe the location and/or qualities of the outdoor environment are important to children's language development? Please explain your answer.

☐ Not at all

☐ Slightly

☐ Moderately

☐ Very much

_____

_____

Would you use the same pedagogy to develop children's language outdoors as indoors? Please explain your answer.

☐ Never
☐ Some of the time
☐ All the time

Do you believe that your relationship and interaction with children is different outdoors than indoors? Please explain your answer.

☐ Not at all
☐ Slightly
☐ Moderately
☐ Very much

Do you believe the way children at your school interact when outdoors or indoors differs? Please explain your answer.

☐ Not at all
☐ Slightly
☐ Moderately
☐ Very much

Do you believe that some children's language development is more inclined to benefit from an outdoor environment than others? Please explain your answer.

☐ Not at all
☐ Slightly
☐ Moderately
☐ Very much

With respect to children's language development, do you believe your role as a teacher differs between an outdoor environment and an indoor environment? Please explain your answer.

☐ Not at all
☐ Slightly
☐ Moderately
☐ Very much

Has your practice in supporting language development changed as a result of taking part in the ELaDiNa-project? Please explain!

☐ Not at all
☐ Slightly
☐ Moderately
☐ Very much

Please give an example of the impact of ELaDiNa on the language development of a child you have taught.

Appendix 2:

ELaDiNa Outdoor Learning Environment Survey

June 2022

This questionnaire is designed to draw attention to details and features of the outdoor environments in which you support language development. The features already listed are based on another survey instrument (POEMS), but we would like you to **add any other features that you have found useful for developing language in children, with concrete examples**. For example, a stream might have prompted children's discussion about where the water is going to or has come from, stimulated an imaginative story or perhaps led to observation and scientific descriptions of the creatures and plants in or near it. We would like you to describe actual examples of language development related to specific features.

1. Questions about you

1.1. Your name

1.2. Name and type of school

1.3. Your country

☐ Germany

☐ Slovenia

☐ Sweden

2. Features in the physical environment

Choose those features on the list below that you find **most useful in developing children's language**. You can add other features in the physical environment that you have found important at the end of the list if you wish, **but the total number chosen (from list + own suggestions) must not exceed five.**

For each chosen feature (including your own suggestions) please explain why you found it useful for language development, and **describe exactly what happened there** in the adjoining comment boxes.

☐ A variety of species of trees

☐ A variety of species of shrubs

☐ A variety of herbaceous flowering plants (perennial or annual)

☐ Vines/climbers

_____

_____

☐ Topographic variations (e.g. mounds, terraces, slopes)

_____

_____

☐ A variety of ground surfaces (e.g. mulch, grass, pebbles)

_____

_____

☐ Logs/deadwood

_____

_____

☐ Rocks

_____

_____

☐ Aspects of the sky

_____

_____

☐ Aspects of the weather

_____

_____

☐ Stream

_____

_____

☐   Lake

_____

_____

☐   Other feature (1), please specify and describe why this feature is useful

_____

_____

☐   Other feature (2), please specify and describe why this feature is useful

_____

_____

☐   Other feature (3). please specify and describe why this feature is useful

_____

_____

☐   Other feature (4), please specify and describe why this feature is useful

_____

_____

3. Natural Loose Parts/Organisms

Choose those Natural Loose Parts/Organisms on the list below that you find **most useful in developing children's language**. You can add other examples of Natural Parts/Organisms that you have found important at the end of the list if you wish, **but the total number (from list + own suggestions) must not exceed five.**

For each chosen example (including your own suggestions) please explain why you found it useful for language development, and **describe exactly what happened there** in the adjoining comment boxes.

☐ Sticks

_____

_____

☐ Branches

_____

_____

☐ Mulch/shredded wood

_____

_____

☐ Pebbles

_____

_____

☐ Shells

_____

_____

☐ Sand

_____

_____

☐ Soil/dirt/mud

_____

_____

☐ Seeds/pine cones etc

_____

_____

☐ Leaves

_____

_____

☐ Wild animals (including worms, insects, spiders, amphibians, mammals, etc)

_____

_____

☐ Domestic animals (including chickens, pets, farm animals, etc)

_____

_____

☐ Other example (1), please specify and describe why this example is useful

_____

_____

☐ Other example (2), please specify and describe why this example is useful

_____

_____

☐ Other example (3), please specify and describe why this example is useful

_____

_____

☐ Other example (4), please specify and describe why this example is useful

_____

_____

4. Natural Context/Affordances for Play and Learning for Language Development

Choose those Natural Contexts/Affordances on the list below that you find **most useful in developing children's language**. You can add other examples of Natural contexts/Affordances that you have found important at the end of the list if you wish, **but the total number (from list + own suggestions) must not exceed five.**

For each chosen example (including your own suggestions) please explain why you found it useful for language development, and **describe exactly what happened there** in the adjoining comment boxes.

☐ Sand play

_____

_____

☐ Grass area

_____

_____

☐ Stepping stones/logs

_____

_____

☐ Rolling/climbing mound

_____

_____

☐ Water feature/pond

_____

_____

☐ Manmade animal habitats

_____

_____

☐ Natural animal habitats

_____

_____

☐ Story telling chair/area

_____

_____

☐ Flower garden

_____

_____

☐ Vegetable garden

_____

_____

☐ Trees

_____

_____

☐ Camp fire

_____

_____

☐ Other example (1), please specifiy and explain why this example is useful

_____

_____

☐ Other example (2), please specify and explain why this example is useful

_____

_____

☐   Other example (3), please specify and explain why this example is useful

_____

_____

☐   Other example (4), please specify and explain why this example is useful

_____

_____

Appendix 3:

ELaDiNa Course Evaluation Form

Course name: ELaDiNa Training 1 (Germany), September 12-16, 2021

1. Questions about you

1.1. Your name

1.2. Name and type of school

1.3. Your country

☐ Germany

☐ Slovenia

☐ Sweden

2. Course content & structure - your comments about the content delivered.

Please answer the following questions by ticking the option that best represents your response.

2.1. Course learning outcomes were clearly stated

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

2.2. I understood the content of this training session

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

2.3. The course sequence was easy to follow

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

2.4. Sufficient time was allowed for each topic

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

2.5. The course content has prepared me well for work

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Agree

2.6. The training had a good mix of theory and practical

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

3. Delivery Methods - your comments about the way instructors delivered sessions.

Please answer the following questions by ticking the option that best represents your response.

3.1. The electronic media used in the presentation furthered my learning and understanding

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

3.2. The delivery methods were a suitable balance for the content of this training

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

3.3. The practical delivery methods assisted my skills, learning and understanding

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

3.4. The methods used by the instructors made the content clear and easy to understand

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

4. Training Activities - your comments about what you did in the activities.

Please answer the following questions by ticking the option that best represents your response.

4.1. The group activities encouraged my participation

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

4.2. The activities developed my learning, skills and understanding

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

4.3. There were sufficient hands-on outdoor activities

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

4.4. The activities drew on my existing skills and knowledge

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

4.5. Please add any additional comments you may have about particular sessions here

_____

_____

5. Instructor/Facilitator - your comments about the style of facilitation/instruction

Please answer the following questions by ticking the option that best represents your response.

5.1. The instructors' enthusiasm about the subject kept my interest during the course.

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

5.2. The instructors presented the content clearly and were easy to understand.

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

5.3. The instructors effectively used the training materials to assist my learning.

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

5.4. The instructors identified real world examples that assisted my learning, or were able to contextualise the information to make it more relevant to my workplace.

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

6. Training Environment and Administration - your comments about the organisation of the training

Please answer the following questions by ticking the option that best represents your response.

6.1. The venue provided a good learning environment.

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

6.2. The process for joining and travelling to this course was easy to arrange.

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

6.3. The accomodation and catering arrangements were sufficient and of a good standard.

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

6.4. The training supported participants' learning needs.

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

6.5. The training organisation staff respected my background and needs.

☐ Strongly Agree

☐ Agree

☐ Disagree

☐ Strongly Disagree

7. General Aspects

Please add your comments in the boxes below each question.

7.1. What session/aspect of this training course made the biggest impression on you?

_____

_____

7.2. Is there anything about this training that you would change or would like changed?

_____

_____

7.3. What new learning about Early Language Development in Nature will you take back to your workplace?

_____

_____

7.4. Your feedback is very important to us. Please expand on any other points about how we could further improve training about Early Language Development in Nature.

_____

_____

Data summaries

Appendix 4:

Appreciating Interactions – video reflections

The purpose of one training session was to explore interactions through role play and discussion to develop alternative possibilities from real life scenarios. The videos are examples taken from the second set of videos submitted by teachers. Staff from different countries were mixed and they used the template provided in the training programme. These are comments made by the 3 groups in response to watching these video clips, which illustrate the sorts of comments that were elicited by this activity.

In the summaries, we can notice commonalities and differences in approaches used and some reflections on them. The examples are not identified by country or setting. Younger age groups precede older.

Footprints - KG

Some children encounter some cloven footprints in the mud. They identify them as boar or deer, but do not explain their reasons. They are following the tracks with excitement. The teacher questions how they know what has made them. They are running on to find the next ones.

Comments on:	Group 1	Group 2	Group 3
Teacher role	Asks question/ open dialogue – keeps it going. Initiator. Short comments.	Observing, leading, gave the children suggestions of what kind of animal it could be.	Background Supporting the child She gives them space for answers and imagination. Open questions at the beginning

Comments on:	Group 1	Group 2	Group 3
Child/children role	Explorers. Motivators. Main talkers.	The children were focused on the footprints not the teacher's question.	Child is enthusiastic. Go deeper and follow his interest.
Nature/ environment role	Footprints of animals were conversation starter.	We think that the activity wasn't planned and came out of the children's interests.	Footprints encourage to talk about them.
Successful aspects	Not stopping the children.	The unplanned, spontaneous situation.	Including the group. Open questions.
Possible changes	We would like to see more of the activity (before – after). Corrective feedback	What happened afterwards? The teacher could have asked: Why do you think it's the track from a …? Describe the animal. Describe what you see. To develop it: Take a picture of the footprint and use it in the classroom to find out what animal it belongs to.	Correct feedback. Active listening. Paraphrase.

Animal homes in the forest – KG

There are various activities shown, including a teacher reading to children outside about what animals live in the forest. The children form groups of five. They are asked to pick up material on their way through the forest to make houses for the animals.

Comments on:	Group 1	Group 2	Group 3
Teacher role	Like a mentor/ instructor. Motivator.	Instructor, storyteller, let's everybody talk. The teacher gives the children an assignment that they are free to solve in their own way.	Gave the idea/example. Introduced the story. Asked – how are you doing and praised them. Initiated group building.

Comments on:	Group 1	Group 2	Group 3
Child/children role	Followed instructions very well. Worked within groups. Had to be creative.	Teamwork, listeners, and actors/builders. Creative – use their own experiences of what's in a house. Nice kids, concentrated, cooperate with each other, encourage, and support each other.	Had the main role. Used to work in groups. They're experienced to work on the same idea 'Build a house for an animal'. Looking for solutions by themselves (describe them). Design a story together.
Nature/ environment role	Nature gave a proper setting (for example, less 'stuff' for listening). Nature was a tool for building.	Provides props- building materials. What role has nature when it comes to dice? More relaxed children, they are calmer. The nature is the physical environment. In the first activity, nature is the props.	Providing material. Inspiring. Giving ideas of what animals need and can use in nature. Calm setting.
Successful aspects	Motivation. Methods like: a circle of children, dice (story telling). Presentation in front of others -> appreciation from everyone.	Teamwork! Building with things from nature. Education and play at the same time. The start with the story. Good start for nature activities. First a small group then a bigger.	Storytelling. Build a house for an animal. Making up a story – presentation. Fantasy. Decision making by children. Documentary -> film it, watch it afterwards in class.
Possible changes	Role of teacher would change with a different group of children.	I'm thinking about the children that might not feel comfortable talking in front of others. Maybe mix the two activities nature and dice – put them together	

Bees – KG

The children are playing by some trees in the park. They notice some resin and assume it is honey, they buzz about pretending to be bees. One child looks closely at the tree resin and speculates about where the bees have gone.

Comments on:	Group A	Group B	Group C
Teacher role	Answering questions with a question.	Encourages the children.	Observe, Wait, Listen. The teacher observes the body language of the child and describes with words what he means.
Child/children role	Children think / build their own theories with their knowledge.	One of the children (3 years old) is the leader and then it is spreading out to the group. Explores his interest. Goes for solutions. Very emotional.	Uses body language when he doesn't have the words. The children's interests lead the conversation and activity.
Nature/ environment role	Interesting discovery (H?/'honey').	Starts the exploration/ imagination. Connections start. Builds the main topic.	Nature was the starting point of everything.
Successful aspects	The time the child was given. Experience. Tools (touch, ?). Activity leads to other activities.	Learning with all the senses of the body.	To stay interested in the child's topic.
Possible changes	Teacher asking: Have you seen this before? (to find out with children what this really is). Go for smell, touch, and compare to honey. Use it for storytelling.		Explore the resin more. Gather more children: What do you think this is? X thinks it's honey or chocolate. Explore the resin with your senses (feel it, smell it, taste it).

Splish, Splash! - School

A child (for whom it is a second language) is sitting by a little stream. The teacher tries to engage him in conversation by narrating his actions.

Comments on:	Group A	Group B	Group C
Teacher role	Gave child words for what he's doing and what things are that he's using. Gives him ideas. Repeats. Encourages. Describes what he is doing.	She does it right, give him time. Repeat sounds. To comment on what he's doing. The way of questioning - give words not tasks. Make connection with what engages the child.	Strategy: Putting into words what he's doing. Started out with more questions, then changes to put into words what he's doing. Splashing the water seems more fun.
Child/children role	Listened, reacted, practised, repeated movements, interacted through movement with her words. He smiles at splish splash, enjoys it, it's stimulating for him.	The level of language is unknown. Be clear with the context – bit confused. The child makes eye contact when the teacher makes fun sounds, splish, splash.	He's looking at first, looks a bit uncomfortable at first. Maybe he thinks he's supposed to answer questions. In the puddle he seems more comfortable. Looks like he's doing something he shouldn't but smiles when the teacher by language encourages him.
Nature/ environment role	Stimulating all the senses: eyes, feel, hear, see. Environment is water, leaves, sticks and stones. Nature helped him cope with the unknown.	Hands on. Clear.	Water is always funny. You can play with it without talking.

Comments on:	Group A	Group B	Group C
Successful aspects	The attention of the teacher and the support with words describing what he is doing. Positive attention/ valuing the child's activity.	Repetition of words.	Letting the child explore the water with his feet. Talking without too many questions. Trying to play with language – saying the word his feet make in the water 'splash'. Showing emotion (laugh).
Possible changes	Little less ideas from the teacher.	Open ended questions. More to answer.	Teacher - maybe pause once in a while. Being on the same level as the child.

Insects in the leaves - School

The children poke amongst the dry leaves to look for insects, using sticks to move them and pick up creatures.

Comments on:	Group 1	Group 2	Group 3
Teacher role	Asking questions, encourages to look closer. Introducing more words and whole sentences, richer vocabulary. Open-minded – concentrating on the children. Her approach is open. Hard to interact while filming but she's doing a good job.	Teacher talks a lot – maybe too much.	Encourages to explore more. Waits patiently. Asks about activity/ exploration. Stays calm.

Comments on:	Group 1	Group 2	Group 3
Child/children role	Excitement and a little bit of fear. They were exploring with a stick. Making a relationship with the insects, building them a house. Don't seem to mind being filmed.	Active, curious, moving. Excited, absorbed, interested, creative, not bored, focused, interactive with each other.	Main explorers. Motivation by themselves. Showed creativity. Combined their knowledge with nature.
Nature/ environment role	Nature is both an object (sticks) and subject (ants). The insects stimulate language development and turns into play. Nature has an emotional impact (caring for the ant).	Elements of surprise, fear, fascination. Changing – the ants move and disappear and come back. Fantasy – ant house. Different materials. Changes from earth, leaves and grass.	Motivator –> insects. Tool for building house.
Successful aspects	The insect film because you can come back to it. Free time exploring (spontaneous teaching). Her approach to the children – she sounds interested and encouraging.	The whole activity.	The calmness – take time! Educative input/ questions. Usage of natural materials.
Possible changes	Like Ingegard said – bring some transparent boxes etc. to be able to study the insects more closely. Another teacher to film	Listen more (Ines' mouse).	Maybe look more closely at/ be informative about the insects. Change perspective to the insect's view.

Signs of winter – School

Small groups of children are given laminated worksheets with pictures of the signs of winter such as icicles, which they are asked to search for in the forest and then report to the teacher.

Comments on:	Group 1	Group 2	Group 3
Teacher role	Active role. High position. Talk much.	Asked a lot of questions. Closed questions. Prepared the worksheet.	Producer of worksheet. Gives information – learning questions.
Child/children role	They had to show and find the things.	Good interaction between children. More peer-to-peer learning.	Searcher, active, focused, comparing.
Nature/ environment role		Outside and looking for things.	
Successful aspects	List?		Work in small groups.
Possible changes	Go more in the background. Go deeper -> child position. Open questions. Another teacher to film 🗓	To bring materials in a basket.	Take the question of the children and give back more open-ended: Where do you think the birds are now? Teacher should be more an observer. Smaller sheet. Sketch pad.

Appendix 5:

Associations of places and purposes for language development activities

In this appendix we report on **the ways that teachers at a training event suggested how they might use three different 'places', by water, in field and forest, to support various language development aims,** such as expanding vocabulary. It shows some of the ideas generated by teachers spending time in these places and discussing the possibilities together.

Aims/Purpose	Places		
	Water	**Field**	**Forest**
Vocabulary	Elements: wind, cold, wet. Feelings – inside and tactile. Structures - shapes and patterns. Animals Materials Differences between land and water. Sounds Views Seasons Orientation – North/ South/East/ West. Numbers Different kinds of 'adult-led' play.	Description of activities. Discovering, naming and comparing small plants and creatures.	Names of animals, trees, plants, weather phenomena (e.g., sunrise, rainbow, sleet...). Fruit (tree) Pinecones Colours Tree species Shapes Naming parts of plants, trees, insects, and animals.

Aims/Purpose	Places		
	Water	Field	Forest
Communication	Play & Role play. Exploring water together. Construction – sand play. Rules Questions and facts. Communication between children, children and adult, people and materials. Physical elements'- what can be done *here*?	A lot of social interaction through games and movement.	
Natural Science		Exploring wildlife (microscopes, binoculars).	Observation Bird watching Life cycle of a tree. Different seeds and fruits in woodland. Animals and insects in this habitat. Footprints and feathers. Soil Temperature
Precise descriptions		Laying down: coming close to the small objects (eye level with the ant) or perceiving changes in the sky. Collecting different plants or 'living objects' – examining and describing how they are alike or different. Moving a lot – communication in terms of social interactions. Diversity of sensory stimuli.	Child chooses an object (e.g., leaf): starts interaction to support detailed description. Confirming, repeating, open questions, give one idea, take several turns, give words. Give offers, choices, and comparisons.

Aims/Purpose	Places		
	Water	**Field**	**Forest**
Imaginative storytelling	What can be in the water? What can be on the other side of the lake? Pick things from the beach or water and tell a story about the things with the children.		Legends of the forest. Branches as figures/story characters. Roots – interesting shapes to make a story. Wind in the trees – a secret language. Friendship between trees. The shapes of the clouds stimulating imagination.
Prepositions & other grammar	In water 'throw into water' On the water Under water 'throw over water' Outside the water Across water 'Walk through water' Describing words – adjectives Comparative adjectives – big, bigger, biggest Singular/plural Nouns Measuring things Past/present tenses Hide and seek Science language: Float Sink Clear transparent water (or not - opaque) Properties of sand/water Temperature of water Ice /frozen	Adjectives stimulated by diversity of sensory stimuli	Under, over, behind, above, among the trees Adjectives: green, warm, windy, stable... Subjectives: leaf, tree, stone soil, bark... Verbs: falling, growing, moving Time: Past (yesterday, last winter) present Present (today, now) Future (what do you think will happen ...?)

Outdoor learning environments artworks

In this appendix, we provide further detail of the discussion about the artworks produced in mixed groups of teachers from different countries. Groups produced some beautiful sculptural artworks that expressed creatively some of the conceptual links they had made about how early language development develops in and through nature. Here we offer a few reflections and snippets of the discussion of them (in *italics*).

Picture 1.

In the first picture above, we can see how the senses (touch, hearing, seeing, smelling) are the means by which children and adults develop language together. *We wrote some words that we bring...* Practice is rooted in personality, skills, didactics, knowledge and hindsight. The children are social linking hands in the circle, all together, surrounded and stimulated by the fruits and riches of nature and the patterns perhaps suggest repetition helps to reinforce their learning. *There is structure... other things can happen, but you need the structure. In the middle, there are hearts because we think that children need to feel nature... The children symbolise that it is all focused on them...*

Picture 2.

In the second picture above, *we started with the things that are important to us. The forest...* We see elemental nature: water, earth, air and the interactions between these natural phenomena and children depicted. *Water is an element that always brings excitement.... to be creative , act out your fantasies in groups or on your own.....* Exploration, through throwing stones into water, balancing or examining mini beasts through magnifying glasses, appears a central theme with plants,

sticks, domestic and wild animals and their bones also playing a role. *There is a lot to take in just like in real life.... We also have to have a bit of magic at the end of the rainbow, because we are out there in every weather.*

In the third picture below, the cycle of seasons provides a spider-like web framework for children to notice changes in nature and learn associated vocabulary and concepts. *The same place in nature will look different. ...The point [of the web] is that we are all connected to nature... and we as teachers are less important things.* The artwork is very tactile with sand and other natural features representative of the seasons being included. Again, using all the senses is shown as stimulating language. This group has also included a heart in the middle by the children suggesting that caring for nature is central. *The hands are we as teachers, the children and nature, not always interact with the children sometimes let them breathe ...*

Picture 3.

In the fourth picture below, the forceful 3-D presence of nature is represented by a sculptural tree that stands tall above the flat plane of the paper. This was the first part of the picture that the group constructed, perhaps indicating that trees were regarded as a key feature in supporting language. Elemental features again appear, including fire and water. The group have included vocabulary to suggest how these features mediate language development through warmth, kindness, playfulness, joy, imagination, calmness and mindfulness.

Picture 4.

In the final picture 5 below, language appears omnipresent outside, represented by letters flying all around in nature. *That's why we have letters all around...* The picture is very tactile and uses *earth and leaves to paint*. It shows the diversity of weather and natural phenomena. *Not just the weather but moods of us and the children...* The children, also included as part of nature with their berry heads, are linked together, *helping each other and learning from each other*, within this rich environment. *With the tree we wanted to show that it starts at the bottom and has to grow and grow...* The roots of the spreading tree extend beyond the limits of the paper; like in the previous picture, nature bursts forth powerfully! *No fear, even though at the beginning it might look like lots of things, we go slowly moving around with more space.*

The art-based activity complements conscious metacognitive consideration of links between language development and nature and the exercise itself prompted lots of discussion about their practice amongst the teachers across different countries. The activity could be used as a whole- school or learning community continuing professional development session to stimulate designing methods of enhancing the outdoor learning environment for language development. Like for children in nature, a hands-on approach can free up creativity of thinking.

Picture 5.