Erdpuls Müllrose — Learning Pathway System

General Concept, Implementation Strategy & Target-Group

Pathway Maps

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Field	Value
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Mission	*Ein Ort, um wieder Mensch zu werden. / A place to become human again.*

This document is compiled strictly from facts present in the operational project documents, the Master Index (v1.4), the BNE Quality Assessment and Leitbild, the Pattern Discovery Toolkit (v1.3), the Token Economy Living Guides (EN/DE v1.2), the Bioregion Mapping Living Guides (v1.2), the BNE Quality Living Guides (v1.2), the Proxemic Integration document (v1.2), and the OER Layer guides (v1.1). No information has been inferred or assumed beyond what is explicitly stated in those sources.

Table of Contents

Part 1 — General Concept

1.1 The Problem This System Is Designed to Solve

The Values-Action Gap (VAG) is not a knowledge deficit. This is the foundational insight from which everything else in this system follows, and it is the claim most directly supported by both the Eurobarometer research cited throughout the Erdpuls programme documents and the behavioural change literature on which the 4A-Pathway is based. The majority of Europeans already value sustainability, endorse its principles, and express the wish to live more sustainably — yet do not act accordingly in their daily choices.

Adding more information to the knowing side of the equation does not close the gap. It can widen it, by making the problem feel more overwhelming and the individual's capacity to respond feel more negligible. Conventional sustainability education makes this mistake repeatedly: more facts about climate change, more statistics on biodiversity loss, more SDG frameworks — delivered to people who already have enough information to act, and who are not acting.

What closes the gap is structured experience followed by structured reflection, repeated over time, in a place the learner knows and can return to. This is the core pedagogical insight behind Erdpuls Müllrose: the campus is not a venue for delivering sustainability content. It is a place where the distance between knowing and doing can be traversed — concretely, bodily, and with social witnesses.

A learning pathway system addresses this at a level that even well-designed individual workshops cannot reach alone. It provides the longitudinal architecture across which the VAG can be closed progressively, across multiple experiences and over time. It makes growth visible, makes the next step navigable, and transforms the relationship between values and action from an impossible leap into a legible journey.

1.2 What a Learning Pathway Map Is — and Is Not

A learning pathway map is a visual and structural representation of the possible routes through which a learner moves from their current state of competence and engagement toward a defined or chosen future state. It differs from a curriculum in three ways that matter fundamentally for VAG work.

A curriculum is designed from the outside in — it represents what an institution has decided a learner should know and do, in what order, by what standard. A learning pathway map is designed from the inside out: it begins where the learner actually is, makes multiple routes visible, and allows the learner to navigate with genuine agency. That experience of having chosen one's own route is not merely an aesthetic preference; it is itself a rehearsal for sustainability action, which is fundamentally an exercise in autonomous judgment. A person who has navigated their own learning pathway has already practised the kind of deliberate, self-directed decision-making that producing sustainable behaviour requires.

Second, a pathway map represents transitions between competency states — it shows what changes as a learner progresses, not only what they will encounter. At each milestone node, the map specifies what the learner can do that they could not do before. This makes the development of capacity visible as a continuous story of growing power, not merely as a sequence of topics covered.

Third, and most directly relevant to the VAG, a well-designed pathway map makes the action dimension intrinsic to every stage, not a terminal destination. Every milestone node in the Erdpuls pathway maps is defined in part by what the learner has done and produced at that point — a contributed dataset, a repaired object, a named pattern card, a designed token economy, a published Elder Memory Map. The 4A-Pathway (Awareness → Acknowledgment → Attitude → Action) is therefore not a description of the pathway as a whole; it is the architecture of each individual milestone node within it.

1.3 Theoretical Foundations

The Values-Action Gap as Design Problem. The VAG is the structural gap between the values a person holds and the behaviours those values would logically require. It is not primarily explained by lack of knowledge, lack of concern, or lack of good intentions. It is explained by the absence of concrete, proximal, socially supported pathways from knowing to doing. The pathway system is designed as a structural response to this diagnosis, providing at every milestone the proximal goal, the social context, and the embodied experience that behavioural change research identifies as necessary conditions.

The 4A-Pathway (Awareness → Acknowledgment → Attitude → Action). The Erdpuls 4A-Pathway, which structures every workshop session, becomes the depth axis of the pathway map. Every milestone node on every pathway sits at a specific 4A stage, identified in the tables below by the column heading *Primary 4A Stage*. A learner or facilitator can therefore see not only that the learner has advanced horizontally along the pathway, but at what depth within the awareness-to-action arc they are currently working. This allows targeted support: a learner who repeatedly stalls at the Attitude stage needs different facilitation than one who stalls at the transition from Acknowledgment to Attitude.

The pathway is spiral, not linear. A participant who has completed all four nodes with the soil laboratory may return the following season and begin again at Awareness — this time with the bioregional dataset as the phenomenon. Progression is recursive, and each spiral returns the learner to familiar ground with deepened eyes.

Anthroposophical Developmental Theory (Steiner). The calibration of the pathway to different target groups draws on Rudolf Steiner's developmental stage framework, used throughout the toolkit as a developmental psychology applicable to all ages and backgrounds. Within Target Group 1 (Children and Youth), the three grade bands each correspond to a distinct developmental mode documented in the OER Layer guides. Children in Classes 1–4 (ages 6–10) are primarily in the will-forces phase: sensation must precede explanation, the world is approached in trust and imitation, and the primary achievement of a Node 1 session is genuine Awareness — a real sensory encounter uncontaminated by received frameworks. Students in Classes 5–8 (ages 11–14) are in the awakening causal-reasoning phase: peer identity is central, "why" questions multiply, and abstract thinking becomes available but is most powerful when anchored in felt experience — the pathway deepens from Awareness into Acknowledgment and begins to reach Attitude. Students in Classes 9–12 (ages 15–18) have access to individual moral judgment: systemic thinking, ethical positioning, and independent research are all developmentally appropriate, making the full 4A arc — including sustained Action and open-science contribution — available for the first time. Elders typically arrive already in the Attitude phase, bringing decades of accumulated acknowledgment, and the pathway for this group focuses on converting that existing Attitude into documented, archived, publicly accessible Action.

Goethean Observation (*Anschauende Urteilskraft*). The principle of "body first, then instrument" is not only a pedagogical technique; it is a map design principle. Entry nodes on every pathway begin with direct sensory encounter, before abstraction or measurement. Learners progress from Tier 1 (human senses as primary instrument) to Tier 2 (simple analogue tools) to Tier 3 (digital instruments including senseBox:edu and openSenseMap) as their pathway deepens. This Goethean tier progression maps onto the concentric ring observation structure and provides a concrete, observable indicator of pathway advancement.

Self-Determination Theory (Deci and Ryan). Self-Determination Theory identifies autonomy, competence, and relatedness as the three conditions under which intrinsic motivation — the kind that produces sustained behaviour change — develops. The pathway system directly supports all three:

autonomy by allowing learners to choose their route through the available nodes; competence by making progress visible and verifiable through concrete output artefacts at each milestone; and relatedness by showing where pathways converge across target groups and where learning is shared. Conventional curricula often support relatedness while suppressing autonomy and undermining the perception of competence by emphasising what has not yet been mastered. Pathway maps invert this balance.

Proxemics (Hall, *The Hidden Dimension,* **1966).** Hall's four distance zones — intimate (0–45 cm), personal (45 cm–1.2 m), social (1.2–3.6 m), and public (3.6 m+) — provide the spatial grammar of the pathway maps. Entry nodes are intimate: hands in soil, face-to-face exchange, personal distance from materials. As learners advance through the pathway, they move outward — to social and public distance, to bioregional scale, to cross-border collaboration in Ring 4 and beyond. The concentric ring observation structure (Ring 0 through Ring 4) is the spatial expression of this proxemic progression, and the pathway map makes this spatial dimension of learning visible alongside the temporal and competency dimensions.

1.4 The Three Navigational Axes

Every milestone node in every Erdpuls pathway map is located at a specific position on three navigational axes simultaneously. Reading a milestone node correctly means identifying its position on all three.

Axis	What It Measures	How It Appears in Practice
X-Axis: Time and Progression	Movement from entry through intermediate, advanced, and leadership stages	The horizontal left-to-right sequence of nodes on each pathway; also reflects the accumulation of token records over time in the participant's blockchain ledger
Y-Axis: 4A-Pathway Depth	Which stage of the Awareness → Acknowledgment → Attitude → Action arc a node primarily develops	Colour-coding of each milestone in the interactive map; the four 4A stages are the four milestone types on every pathway
Z-Axis: Spatial-Sensory Depth	Movement from intimate sensory encounter (Ring 0) outward to bioregional and cross-border engagement (Ring 4+)	Reflects the Goethean Tier $1 \rightarrow 2 \rightarrow 3$ progression, the proxemic distance from materials, and the concentric ring structure of campus and bioregion

The three axes are not independent: progression along the X-axis generally requires deepening on both the Y and Z axes. A learner who completes four sessions in the Awareness stage without moving into Acknowledgment has not advanced on the pathway — they have repeated the entry node. The pathway maps make this distinction visible and allow facilitators to diagnose where a learner has plateaued and which axis most needs attention.

1.5 The Five Competency Clusters as Pathway Dimensions

All five OER Competency Clusters — defined in the Master Index (v1.4) and aligned to the Brandenburg BNE Gestaltungskompetenzen — are addressed to varying degrees at every pathway node. The pathway maps show which clusters are most active at each milestone, enabling a learner or facilitator to see whether a learner's competency profile is developing evenly across all five dimensions or deepening in particular areas that match their context and interests.

Competency Cluster	BNE Alignment	Primary Pathway Expression
Environmental Literacy	4.1.1, 4.1.2, 4.1.3	Sensory soil knowledge, species identification, seasonal ecological rhythms, bioregional boundary awareness, longitudinal environmental monitoring
Scientific Inquiry	4.1.4, 4.2.1, 4.3.2	Sensor dialogue, iNaturalist contribution, openSenseMap data entry, independent research question design, open data literacy and ethics
Technology Competence	4.1.2, 4.3.2	senseBox:edu construction and operation, openSenseMap station management, basic QGIS orientation, IoT network understanding, blockchain transparency literacy
Economic Understanding	4.2.2, 4.2.3, 4.3.1	Token economy participation, four-element recognition (Cooperation, Reciprocity, Mutualism, Regeneration), Repair Café engagement, UBECrc design exercises, critical analysis of market economics
Social-Emotional Learning	4.2.4, 4.3.3, 4.3.4	Empathy for soil organisms and place, intergenerational knowledge exchange, cross-cultural proxemic negotiation, Values-Action Map reflection, Personal Quality Commitment

1.6 The Token Economy as Pathway Tracking System

The UBECrc token economy, implemented on the Stellar blockchain, performs a dual function within the pathway system. It is, first, the operational embodiment of Reciprocal Economics — making visible the contributions of Cooperation, Reciprocity, Mutualism, and Regeneration that conventional accounting renders invisible. But it is simultaneously the pathway's longitudinal tracking infrastructure.

Every token earned is a pathway trace: a verifiable, timestamped record of an experience that advanced the learner's competency profile in a specific cluster and at a specific 4A stage. When token records are mapped against the competency clusters and the 4A stage of the earning activity, they produce an automatically generated learning pathway trace for each participant. This makes the token ledger the longitudinal evidence base for the pathway system — converting the invisible work of learning into a publicly verifiable record that belongs to the participant, not to the institution.

The four token elements map onto the pathway in the following way. Cooperation tokens tend to cluster at Awareness and Acknowledgment nodes, where collaborative observation and group synthesis are the primary activities. Reciprocity tokens tend to cluster at Acknowledgment and Attitude nodes, where the bidirectional exchange of skills, knowledge, and care is most visible. Mutualism tokens cluster at Action nodes, where the benefit of a contribution extends beyond the participants themselves — to the global iNaturalist dataset, to the Erdpuls pattern language commons, to a cross-border citizen science network. Regeneration tokens mark the highest-impact Action nodes — those where ecological or social conditions are demonstrably improved by the participant's contribution, whether through a planted hedgerow, a published Elder Memory Map, a repaired object, or a facilitated cross-border programme.

1.7 Cross-Group Convergence Zones

A distinctive feature of the Erdpuls pathway system is that the five target-group pathways are not parallel and isolated tracks. They converge at specific programme events where participants from different groups encounter the same materials, places, data, and each other — but from qualitatively different vantage points. These convergence zones are among the most educationally powerful moments in the programme, because they generate the multi-perspectival data, the intergenerational relationships, and the cross-cultural reciprocity that no single-group pathway can produce alone.

The seasonal observational cycle is the most structurally important convergence mechanism. A school class visits a specific soil patch in spring and establishes baseline observations — fresh eyes, high energy, Tier 1 encounter. Adults and families deepen with practical garden knowledge in early summer — connecting the campus soil to their own garden data. The Artist-in-Residence maintains daily sustained observation across midsummer — producing the deepest pattern documentation. An intergenerational group layers elder memory over the accumulated data in autumn — the elder's memory of the willow stand that once grew on this patch is now confirmed or complicated by the spring class's

organism count. A cross-border group extends the observations across the Oder-Neisse border in late autumn — placing the Müllrose soil within the larger glacial landscape that predates the national boundary.

The convergence of these five data streams across a single soil patch, over a single season, produces a depth of place-knowledge that no single group could generate alone. Convergence zones are marked explicitly in the pathway maps below and identified in the Cross-Group Convergence Map in Part 4.

1.8 The Facilitator Pathway

The Learning Pathway System includes a dedicated facilitator development pathway, which is the primary institutional capacity-building mechanism. This pathway moves from programme participant through co-facilitator and lead facilitator to programme designer and trainer of facilitators, making the full development trajectory visible and navigable at every stage.

The facilitator pathway is grounded in the Collective Threshold Model documented in the token economy architecture: the four participation pathways — including the Supported Rate — ensure that financial means do not determine access to facilitator development. Tokens earned in participant roles contribute to the Supported Rate threshold for facilitator training, and facilitation itself generates Regeneration tokens that are the highest-value element in the token economy. This creates a structural incentive for participants to advance to facilitation that is not financial but social and ecological: those who facilitate are publicly acknowledged as contributors to the community's capacity to learn.

Part 2 — Implementation Strategy

2.1 Phased Rollout Aligned to Project Phases

The Learning Pathway System is designed to deepen across the three documented project phases (2026–2030), with each phase adding a layer of infrastructure while preceding layers continue operating. The entry nodes for all five target groups are available from Phase 1 onward; the full longitudinal depth of the system — including external impact evaluation and cross-border integration — develops through Phase 3.

Phase	Period	Pathway Infrastructure Added	Key Deliverable
Phase 1: Establish and Activate	2026–2027	Entry nodes for all five target groups; paper token cards and milestone documentation templates; Values-Action Map worksheet integrated into all sessions; first full seasonal observational cycle	Baseline competency profiles for all five groups; first complete seasonal convergence cycle; token ledger operational
Phase 2: Renovate and Expand	2027–2028	Formal participant evaluation instruments (BNE 5.2.2); digital pathway dashboard linked to token ledger; facilitator pathway formalised with co-facilitator training programme; returning-participant pathway traces recorded and compared	First facilitator training cohort; digital pathway traces for returning participants; first cross-group convergence events formally documented
Phase 3: Mature and Radiate	2028–2030	External impact evaluation (BNE 5.2.3); regional model dissemination; pathway system published as OER; cross-border pathway integration with Polish partner sites through INTERREG or bilateral mechanisms	Pathway system as transferable OER; longitudinal dataset of pathway traces across three full seasons; regional facilitator network established

2.2 The VAG Diagnostic at Every Node

The Values-Action Gap is made explicitly visible at every pathway milestone, not only at the end of a learning sequence or in a seasonal summary session. This is the critical implementation principle: the gap is not treated as a failure state to be confessed at the end of the year but as the productive tension that drives learning at every stage.

At each milestone node, the facilitator works with the participant on a three-column reflection adapted from the Values-Action Map worksheet used in the adult BNE Quality Living Guide:

- **Left column** — What do I know I should do for sustainability in this domain?
- **Middle column** — What have I actually done since my last milestone?
- **Right column** — What stands between the knowing and the doing, and what would concretely reduce that distance?

The right column is the most important. It converts the gap from a source of guilt or helplessness into a design problem with specific, actionable dimensions. It also generates institutional learning: when multiple participants' right columns identify the same barrier — lack of access to soil in an urban school, lack of a repair community, lack of digital infrastructure for sensor contribution — that barrier becomes a programme development priority for the following season.

Each pathway map below includes a **VAG Bridge Question** for every milestone node. These questions are phrased in the second person, in the facilitation voice, and can be used directly in the field without adaptation. They are calibrated to the developmental and contextual realities of each target group: the question at a child's Node 2 activates the same gap-closing mechanism as the question at an elder's Node 2, but at the right register of abstraction and personal agency.

2.3 Pathway Documentation Standards

Each participant's pathway progress is documented in three parallel systems that are designed to be mutually reinforcing.

The **physical Portfolio**, maintained by the participant and held at Erdpuls between visits, contains their Soil Explorer Field Sheets, pattern cards, Values-Action Maps, and Personal Quality Commitment cards from each session. This physical record is the participant's own; Erdpuls holds it only as a service to the participant and returns it on request.

The **Token Ledger** on the Stellar blockchain provides the verifiable, timestamped record of each completed milestone node. Because the blockchain record is public and tamper-resistant, it belongs to the participant even if the Erdpuls platform changes or the software is discontinued. A Regeneration token earned for planting a hedgerow in 2026 is still readable in 2036.

The **Annual Pattern Language Assembly**, held each January, synthesises the accumulated pathway traces of all participants from the preceding year into a coherent, place-specific pattern language document. This is the institutional memory of the pathway system — the moment at which individual learning trajectories are woven into a collective understanding of the sub-bioregion that no individual pathway could generate alone.

2.4 Capacity Building at Three Levels

The implementation strategy addresses capacity building at three levels simultaneously, because the VAG operates at all three and a system that addresses only one will eventually be limited by the others.

At the **individual level**, capacity building means the progressive development of the skills, knowledge, habits, and dispositions that constitute sustainability literacy in practice. The pathway system provides the proximal milestones that sustain motivation across the slow arc of genuine behaviour change, making each learner's growing competency visible through concrete output artefacts that they own.

At the **facilitator level**, capacity building means the development of the pedagogical skill to guide others through the VAG. The facilitator pathway makes the full development trajectory visible and navigable, with the Collective Threshold Model ensuring that financial means do not determine access. The token economy provides structural support for this, as tokens earned in participant roles contribute to the Supported Rate threshold for facilitator development participation.

At the **institutional level**, capacity building means the accumulation of knowledge, relationships, data, and practices that allow Erdpuls to become progressively better at closing the VAG for its participants. The aggregated pathway trace data — from token ledgers, Values-Action Maps, Quality Compass records, and annual Pattern Language Assemblies — constitutes the longitudinal evidence base that allows Erdpuls to assess its own impact, improve its programme design, and demonstrate compliance with BNE quality criteria 5.2.2 and 5.2.3 in Phases 2 and 3.

Part 3 — Target-Group Pathway Maps

The following pathway maps are the operational heart of the Learning Pathway System. Across the five target groups, seven distinct pathways are documented in total: Target Group 1 (Children and Youth) is differentiated into three grade bands — Classes 1–4, Classes 5–8, and Classes 9–12 — in alignment with the OER Layer guides (Guides 01, 02, and 03) and the differentiation matrices documented in the 13-Questions and BIKOBO curriculum sections. Each map shows the specific route available to one audience, from their particular entry conditions through four milestone stages aligned to the 4A-Pathway, toward the most advanced forms of engagement documented in the existing Erdpuls guides. Each map is preceded by a context note explaining the specific form the VAG takes for that audience, and each milestone node includes a VAG Bridge Question for direct use in facilitation.

All pathway maps share the same structural logic: four milestone nodes, each defined by a primary 4A stage, a core workshop experience from the existing guide library, a concrete output or evidence artefact, a token economy integration, the active competency clusters, and a VAG Bridge Question.

> *Stage colour legend for reference:* `AWARENESS` — *entry sensory encounter* · `ACKNOWLEDGMENT` — *recognition of systemic connection* · `ATTITUDE` — *values reflection* · `ACTION` — *concrete documented contribution*

Target Group 1 — Children and Youth

Ages: 6–18 | School classes across three grade bands, differentiated by the OER Layer guides **Entry zone:** Zone B — Outdoor Soil Laboratory (all grade bands); Zone E for Grade Band C community integration **Overarching tagline:** Building the ecological imagination before the values-action gap hardens

Structural note. Target Group 1 is differentiated into three grade bands that correspond directly to OER Learning Guides 01, 02, and 03 and to the differentiation matrices in the 13-Questions and BIKOBO curriculum sections. The three grade bands are not parallel versions of the same programme; they represent qualitatively different modes of engagement that reflect the developmental stage of each age group. A Class 1–4 session protects the will-forces phase from premature conceptualisation. A Class 5–8 session activates awakening causal reasoning through systematic measurement and peer investigation. A Class 9–12 session addresses individual moral judgment through independent research, ethical positioning, and open-science contribution. All three bands share the same 4A-Pathway architecture and the same Erdpuls concentric ring geography — but the depth, abstraction, and agency available at each stage differs substantially. Cross-band encounters are themselves a convergence resource: a Grade 9–12 student who co-facilitates a Grade 1–4 session is undergoing a developmentally appropriate Action-stage experience that no single-band programme can provide.

Grade Band A — Classes 1–4 · Ages 6–10 — Lower Primary School

OER Guide: `01_learning_guide_grades_1-4.md` — *Earth Detectives: First Encounters with Living Ground* **Developmental mode:** Feeling-based experience — will-forces dominant; imitation and rhythm; sensation before interpretation **Token Economy level:** Token Seeds (introductory, pre-economic — sharing a discovery creates value for the group) **VAG status at entry:** The gap has not yet hardened. The primary task is not closing a gap but preventing one from forming — by establishing, from the first encounter, that direct sensory attention to the living world is both possible and consequential.

Node 1 — Meeting the Living Ground

Field	Detail
Primary 4A Stage	AWARENESS
Concentric Ring	Ring 0–1
Entry Condition	First Erdpuls visit; no prior ecological framework required or assumed
Linked Workshop	OER Learning Guide 01 — Phases 1–2 (Opening Stone Circle; Body Calibration; Smell Jar Comparison)

Field	Detail
Core Experience	Opening stone circle ritual establishes rhythm and readiness; Ring 0 body calibration — children kneel, touch, smell, and listen before any tool is introduced; Smell Jar comparison (three soil or substrate types — children describe in own sensory language, no labels); Tier 1 sensory encounter through touch, smell, colour, and sound; each child draws one Earth Detective Card (what they notice, in their own image-language)
Output / Evidence Artefact	Earth Detective Card (individual illustrated observation); entry on the Class Community Observation Board
Token Element	Token Seed — awarded when a child shares a discovery with the group (giving knowledge is itself a contribution)
Active Competency Clusters	Environmental Literacy · Social-Emotional Learning
VAG Bridge Question	*"You found something alive in the soil. What do you think it eats? Where do you think it sleeps at night? You just asked a scientist's question — because that's exactly what scientists ask."*

Node 2 — The Soil Speaks Numbers

Field	Detail
Primary 4A Stage	ACKNOWLEDGMENT
Concentric Ring	Ring 1–2
Entry Condition	Has completed Node 1; second visit or same-day continuation
Linked Workshop	OER Learning Guide 01 — Phase 3 (senseBox conversation partner; iNaturalist observation, facilitator-guided)

Field	Detail
Core Experience	senseBox MCU introduced as a "conversation partner" — it notices temperature and moisture; we notice texture and smell; Sensor Dialogue at introductory level: facilitator reads out the senseBox numbers while children hold or smell the same soil, inviting comparison without hierarchy ("which tells us more about what it feels like to be here?"); first iNaturalist observation record (facilitator uploads, children receive their observation IDs); Class Soil Portrait begun — collaborative drawing showing above-ground, surface, and below-ground layers with senseBox readings labelled
Output / Evidence Artefact	Class Soil Portrait (in progress, completed in Node 4); first iNaturalist observation IDs assigned to the class; senseBox data printout — the class's first contribution to the global openSenseMap network
Token Element	Token Seed — for contributing a drawing to the Class Soil Portrait (a gift to the collective record)
Active Competency Clusters	Environmental Literacy · Scientific Inquiry
VAG Bridge Question	*"Someone in Japan or Brazil could look at the number your senseBox sent and know what the air is like in Müllrose today. You sent a message to the whole world. What else do you know — about your garden, your street, the puddle near your school — that the world should hear?"*

Node 3 — What Does the Ground Need from Us?

Field	Detail
Primary 4A Stage	ATTITUDE
Concentric Ring	Ring 1–2 (garden zone)
Entry Condition	Third visit or seasonal return; Token Seed jar has been accumulating
Linked Workshop	OER Learning Guide 01 — Token Seed ceremony; introductory garden care activity

Field	Detail
Core Experience	Hands-on garden care activity (watering, weeding, planting) as an embodied act of contribution — not instruction but participation; Token Seed ceremony: each group shares its most surprising discovery from prior visits, tokens flow to those who found and to those who listened and learned; picture-based Values-Action Map (drawn not written: what I know / what I do — two columns, image format); discussion prompted by the facilitator: "what does this garden need from us?"
Output / Evidence Artefact	Planted or tended garden area (documented with photograph); picture Values-Action Map (kept by child); Token Seed jar count and class collective achievement celebrated
Token Element	Token Seed + first introduction of Reciprocity — caring for the garden and receiving its food is an exchange; the facilitator names this explicitly without requiring the children to conceptualise it
Active Competency Clusters	Economic Understanding · Social-Emotional Learning
VAG Bridge Question	*"The seeds we planted today won't be ready to eat until you come back. What will you do to make sure the soil is ready for them — between now and your next visit?"*

Node 4 — Earth Detectives Share Their Science

Field	Detail
Primary 4A Stage	ACTION
Concentric Ring	Ring 0–2
Entry Condition	Has completed Nodes 1–3; final session or end-of-year visit
Linked Workshop	OER Learning Guide 01 — Phase 4 (Class Soil Portrait completion; Closing Circle); presentation to another class, parent group, or school assembly

Field	Detail
Core Experience	Class Soil Portrait completed collaboratively and formally titled; children present their findings to a real audience (another class, a parent afternoon, or a school assembly) in their own words with no script; facilitator supports but does not speak for the children; iNaturalist observation IDs reviewed and shared with the class; Closing Circle — each child names one thing they are taking home in their memory (one word or one image; no response is wrong)
Output / Evidence Artefact	Completed and presented Class Soil Portrait (photographed and archived; printed copy returns to classroom); iNaturalist observation record; Closing Circle record (one word per child, documented on board and photographed)
Token Element	Token Seed + Cooperation — presenting knowledge to others is the highest Token Seed act: the discovery travels beyond the group that made it
Active Competency Clusters	Environmental Literacy · Social-Emotional Learning
VAG Bridge Question	*"You just taught another class something about soil that they didn't know before. What does it feel like to be the one who knows? What do you want to find out next time you come back?"*

Convergence zones for Grade Band A: The spring Node 1 organism count from a Class 1–4 visit is the earliest entry in the Erdpuls seasonal observational cycle — it becomes the baseline against which Classes 5–8 (summer) and elders (autumn memory comparison) are later interpreted. The Class Soil Portrait is archived in the Erdpuls programme commons and becomes source material for Artist-in-Residence pattern documentation. At Node 4, children present to real audiences drawn from other target groups, creating a simple but genuine intergenerational convergence.

Grade Band B — Classes 5–8 · Ages 11–14 — Middle School

OER Guide: `02_learning_guide_grades_5-8.md` — *Field Investigators: Measuring the Living World* **Developmental mode:** Discovery-based understanding — awakening causal reasoning; peer identity central; abstract thinking available but most powerful when anchored in observation **Token Economy level:** Intermediate — all four elements introduced and earned through real activities **VAG status at entry:** The gap is beginning to form. Students this age have enough cognitive development to feel the distance between environmental knowledge and personal action, but peer identity and a sense of growing competence are both powerful motivators. The pathway is designed to make systematic investigation and data contribution feel personally meaningful and socially recognised.

Node 1 — First Systematic Encounter

Field	Detail
Primary 4A Stage	AWARENESS
Concentric Ring	Ring 0–2
Entry Condition	First Erdpuls visit; general environmental awareness possible but no site-specific knowledge
Linked Workshop	OER Learning Guide 02 — Questions 1–8 of the 13-Question soil protocol; Pattern Discovery Toolkit Ring 0–1
Core Experience	Ring 0 body calibration with explicit Sensor Dialogue framing introduced from the first moment: students are told they will make two measurements of everything — one with their body, one with the instrument — and that both are real data; Tier 1 full sensory encounter followed by the first 8 questions of the soil protocol (touch, smell, colour, texture, organism count, moisture estimate, temperature estimate, pH estimate); senseBox MCU introduced and operated in pairs with facilitator guidance
Output / Evidence Artefact	Completed Soil Field Sheet (Questions 1–8); first *Mein Wert* / *Sensor-Wert* comparison journal page; group photograph of soil profile with measurement labels
Token Element	Cooperation — for completing the paired Sensor Dialogue together across the full Question 1–8 sequence
Active Competency Clusters	Environmental Literacy · Scientific Inquiry · Technology Competence
VAG Bridge Question	*"Your nose said 'wet and earthy' and the sensor said 87% humidity. You were both right — they were just measuring different things. What can your nose tell you that the sensor never can? And what can the sensor tell you that your nose cannot?"*

Node 2 — Measuring What Matters

Field	Detail
Primary 4A Stage	ACKNOWLEDGMENT
Concentric Ring	Ring 1–3
Entry Condition	Returns for second session; has completed Node 1 Field Sheet; ready to extend the baseline into a systematic comparison
Linked Workshop	OER Learning Guide 02 — full 13-Question protocol; iNaturalist upload; openSenseMap data entry; Comparative Data Board
Core Experience	Full 13-Question soil protocol completed, extending the Node 1 baseline to include soil horizon reading, comparison between two contrasting patches on campus, and classification of organisms by feeding guild; systematic data recording in Field Sheet format; iNaturalist species observations uploaded independently (minimum 3 confirmed species); openSenseMap data contribution to the Erdpuls station; Comparative Data Board updated — students place their patch data alongside data from prior classes and prior seasons
Output / Evidence Artefact	Complete 13-Question Field Sheet dataset; verified iNaturalist observations; openSenseMap data point in the Erdpuls longitudinal record; one entry on the Comparative Data Board with the student's name and date
Token Element	Mutualism — iNaturalist and openSenseMap contributions extend benefit to global open science beyond any single visit or class
Active Competency Clusters	Environmental Literacy · Scientific Inquiry · Technology Competence
VAG Bridge Question	*"Your data is now part of a global monitoring network that scientists actually use. Compare your patch against the one by the wall — what is different, and why might that difference matter for the organisms living there? Who else needs to know about this difference?"*

Node 3 — The Economy of the Garden

Field	Detail
Primary 4A Stage	ATTITUDE
Concentric Ring	Ring 2–3
Entry Condition	Has completed Node 2; ready for values-level engagement with economic and social frameworks
Linked Workshops	Token Economy Guide (four elements — intermediate introduction); Bioregion Mapping Guide (introductory Ring 3 transect)
Core Experience	Garden Economy Game — both rounds played in full; four-element discussion with student-generated examples from their own lives for each element (students name one personal example of Cooperation, Reciprocity, Mutualism, and Regeneration they have experienced); introductory bioregion boundary deliberation (Ring 3 walk: where does the ecosystem we have been measuring end?); first written Values-Action Map (three-column format introduced: what I know / what I do / what stands between — image-supported for students who prefer it)
Output / Evidence Artefact	Token card set from Garden Economy Game with all four elements named and described in the student's own words; bioregion boundary proposal with ecological criteria stated; written Values-Action Map
Token Element	Reciprocity — for bidirectional exchange demonstrated in Round 2 of the Garden Economy Game
Active Competency Clusters	Economic Understanding · Social-Emotional Learning
VAG Bridge Question	*"In Round 2, who won? [No clear winner — everyone got what they needed.] What would have to change about how your school works for Round 2 to be the normal way of doing things? Who in your school has the power to make one of those changes?"*

Node 4 — Field Investigators Contribute

Field	Detail
Primary 4A Stage	ACTION
Concentric Ring	Ring 2–4
Entry Condition	Has completed Nodes 1–3; returning participant (second-year preferred); ready to design an independent investigation question
Linked Workshops	OER Learning Guide 02 — independent investigation design section; optional Memory Market participation (if timed with elder convergence programme)
Core Experience	Independent investigation question designed and written in the student's own words, derived from their own prior Field Sheet data; minimum two return visits to the same patch with senseBox, with data recorded each visit; seasonal comparison of own data against the Comparative Data Board; optional Memory Market participation — students paired with an elder participant to exchange observation skills for landscape memory
Output / Evidence Artefact	Written investigation question with documented methodology; seasonal comparison dataset in openSenseMap; updated Comparative Data Board entry; optional Memory Market exchange record
Token Element	Mutualism (seasonal data contribution to Erdpuls longitudinal commons) + optional Reciprocity (Memory Market bidirectional exchange)
Active Competency Clusters	Scientific Inquiry · Technology Competence · Social-Emotional Learning
VAG Bridge Question	*"You designed a question that no one has answered before about this specific patch of soil. What would it mean for this investigation to keep going — next year, the year after? Who would need to care about it besides you, and how would you get them to care?"*

Convergence zones for Grade Band B: Node 2 produces the summer layer of the Erdpuls seasonal observational cycle — the systematic Comparative Data Board entries that connect the spring baseline (Grade Band A) with the autumn elder memory comparison (Target Group 3). Node 4 Memory Market participation places 11–14-year-old investigators in structured intergenerational exchange with elders, generating Reciprocity tokens in both directions and producing the cross-age encounter that is among the most pedagogically powerful events in the programme.

Grade Band C — Classes 9–12 · Ages 15–18 — Upper Secondary

OER Guide: `03_learning_guide_grades_9-12.md` — Upper secondary research guide
Developmental mode: Judgment-based action — individual moral agency emerging; systemic thinking available; ethical dimensions accessible; scientific language and meta-critique appropriate **Token Economy level:** Full — UBECrc design exercise; all four elements earned through independent research and facilitation contributions **VAG status at entry:** The gap is fully present and beginning to be felt as a personal contradiction. Students this age are capable of recognising the gap as a systemic problem, not merely a personal failing — and this recognition is itself the entry point. The pathway makes individual judgment, independent contribution, and co-facilitation all developmentally appropriate and structurally supported.

Node 1 — Research Entry and Question Design

Field	Detail
Primary 4A Stage	AWARENESS
Concentric Ring	Ring 0–4
Entry Condition	First or returning Erdpuls visit; ages 15–18; individual judgment beginning to consolidate
Linked Workshop	OER Learning Guide 03 — research entry protocol; Pattern Discovery Toolkit (full Goethean depth at Ring 0–4)
Core Experience	Full Goethean observation protocol at Ring 0–4 — students are asked explicitly to distinguish between perception (what they directly sensed) and interpretation (what they inferred) in their written field notes; full senseBox deployment with independent operation (students configure and deploy the station themselves, with facilitator available for technical support); research question formulation workshop: "what genuinely interests me about this soil and this place?" — students write a question in their own words, grounded in their own Node 1 observations; iNaturalist observations uploaded with the student as the documenter of record (not the facilitator)
Output / Evidence Artefact	Written research question (own words, documented and dated); full Sensor Dialogue record (perception / instrument comparison across all measured parameters); iNaturalist observations with student attributed as observer

Field	Detail
Token Element	Cooperation — for engaging the Erdpuls facilitator and the wider scientific community in the process of formulating a rigorous and honest question
Active Competency Clusters	Environmental Literacy · Scientific Inquiry · Technology Competence
VAG Bridge Question	*"You just wrote a research question that no published paper has answered for this specific sub-bioregion. What would it mean to you if someone found that question in five years and built on it? What would need to be true about how you document it for that to be possible?"*

Node 2 — Data Collection and Pattern Recognition

Field	Detail
Primary 4A Stage	ACKNOWLEDGMENT
Concentric Ring	Ring 2–4
Entry Condition	Has completed Node 1; returns for minimum two follow-up visits with continued data collection
Linked Workshops	OER Learning Guide 03 — systematic data collection and GIS introduction; Pattern Discovery Toolkit (pattern card methodology)
Core Experience	Systematic data collection across minimum two return visits to the same site; GIS introduction with QGIS or equivalent (facilitated — students produce one basic map layer from their own data); pattern card methodology — students name and describe minimum two patterns they have documented independently, following the Alexander-derived pattern language format; openSenseMap longitudinal data entry with student as data owner; connection of own pattern cards to the evolving Erdpuls pattern language
Output / Evidence Artefact	Minimum two-season dataset in openSenseMap with student attribution; minimum 2 named pattern cards in Erdpuls programme commons; GIS map layer draft (facilitated); written pattern description following the standard Erdpuls pattern card format

Field	Detail
Token Element	Mutualism — longitudinal data and pattern card contributions extend benefit to the entire Erdpuls programme beyond the individual visit
Active Competency Clusters	Environmental Literacy · Scientific Inquiry · Technology Competence
VAG Bridge Question	*"Your data shows a pattern that no single visit and no single instrument would have found — because you came back across seasons and compared. Who else needs to see this? What changes in how you describe your findings when you imagine a scientist, a farmer, and a ten-year-old all reading it at the same time?"*

Node 3 — Ethics, Economics, and Systems Thinking

Field	Detail
Primary 4A Stage	ATTITUDE
Concentric Ring	Ring 1–3 (workshop and community)
Entry Condition	Has completed Nodes 1–2; individual ethical judgment active; ready for critical economic analysis
Linked Workshops	Token Economy Guide — UBECrc design exercise (upper secondary level); BNE Quality Guide (critical values reflection)
Core Experience	UBECrc design exercise: students design the parameters of a reciprocal economy for a specific community context of their own choosing — which activities would be recognised, which tokens would flow, how would the Collective Threshold function; critical examination of what the current economic system fails to measure (soil health, biodiversity, intergenerational equity, elder knowledge); full self-administered Values-Action Map (three-column adult format, without facilitator prompting); written ethical positioning statement: "what do I owe the ecosystems that sustain me?"

Field	Detail
Output / Evidence Artefact	UBECrc design document (minimum 2 pages, including a worked example with at least three token flows described); full self-administered Values-Action Map; one-paragraph written ethical positioning statement (kept in portfolio, archived at Erdpuls)
Token Element	Reciprocity (UBECrc design involves imagining exchange relationships from multiple perspectives) + Mutualism (design exercise output contributes to programme quality development)
Active Competency Clusters	Economic Understanding · Social-Emotional Learning
VAG Bridge Question	*"Your UBECrc design makes visible something that the current economy makes invisible. Who has the power to implement something like this in your community — your school, your town, your neighbourhood? What is the most important conversation you would need to have with them — and what would you say in the first thirty seconds?"*

Node 4 — From Learner to Co-Researcher

Field	Detail
Primary 4A Stage	ACTION
Concentric Ring	Full bioregion → open science commons
Entry Condition	Has completed Nodes 1–3; ready to publish findings under own name and to co-facilitate a session for a younger grade band
Linked Workshops	OER Learning Guide 03 — open science contribution protocol; co-facilitation training; Pattern Language Assembly; optional INTERREG youth programme connection

Field	Detail
Core Experience	Open science contribution: research findings documented and submitted to openSenseMap and iNaturalist as a public record attributed to the student by name, under CC BY-SA 4.0; co-facilitation of a minimum one Grade Band A or Grade Band B session (supervised by lead facilitator) — the student leads the Ring 0 calibration or Sensor Dialogue phase independently; Pattern Language Assembly participation as a contributor; optional: INTERREG youth programme connection for students interested in cross-border engagement
Output / Evidence Artefact	Published open-science data contribution with student attribution (persistent URL or Zenodo record); documented co-facilitation session with written evaluation from the lead facilitator; Pattern Language Assembly contribution (pattern card or GIS data layer); optional INTERREG youth network participation record
Token Element	Regeneration — open-science publication permanently extends the community's access to place-knowledge; co-facilitation increases the programme's teaching capacity
Active Competency Clusters	Scientific Inquiry · Technology Competence · Social-Emotional Learning
VAG Bridge Question	*"You have now facilitated a session for younger students and published your findings under your own name. What changed in your understanding of the soil when you had to explain it to a ten-year-old? And what is the investigation you most want to continue — and what would need to be true for you to still be working on it at university?"*

Convergence zones for Grade Band C: Node 4 co-facilitation creates the primary cross-band convergence within Target Group 1: a Grade 9–12 student facilitating a Grade 1–4 or Grade 5–8 session is both performing an Action-stage milestone and generating a Regeneration token that the programme counts among its highest-value contributions. The open-science data published at Node 4 enters the same longitudinal commons as the Grade Band B Comparative Data Board — the two datasets are designed to be read together. Pattern Language Assembly participation at Node 4 places these students in the same annual synthesis event as elders, artists, and cross-border delegations, completing the full cross-group convergence architecture.

Target Group 2 — Adults and Families

Ages: 18+ | Mixed-age community participants, families, informal adult learners **Entry zone:** Full campus — ring sequence, Repair Café, Zone B **Tagline:** Honouring existing knowledge before building new frameworks

Context. Adults and families arrive with the VAG already installed. They know, intellectually, that they should consume less, drive less, waste less. The gap is not a knowledge problem; it is a motivation, habit, and systemic problem. Adults also arrive with practical life knowledge — of gardening, cooking, repair, local history, landscape change — that is precisely the kind of knowledge the Erdpuls programme needs and honours. The adult pathway is designed to make this existing knowledge visible and valued before new frameworks are introduced, creating the epistemic respect that adult learning requires. The Values-Action Map worksheet, used in full adult form from Node 2 onward, makes the gap itself the central learning object rather than a source of shame.

Node 1 — Sensory Re-entry

Field	Detail
Primary 4A Stage	AWARENESS
Concentric Ring	Ring 0–4 (full sequence)
Entry Condition	Community member; first or second Erdpuls visit; possible prior awareness of sustainability issues in the abstract
Linked Workshop	Questions to the Soil — Living Guide 2 (Adults and Families); full ring sequence
Core Experience	Full ring sequence (Rings 0–4); Goethean observation protocol throughout; Soil Explorer Notebook as personal record; Sensor Dialogue at Tier 1→2 (sensory estimate paired with instrument reading); Ring 3 oral history prompt ("What has changed in this landscape in your lifetime?"); no framework introduction until after the full ring walk is complete
Output / Evidence Artefact	Completed Soil Explorer Notebook; Ring 3 landscape memory record (written or audio, with consent); first Mein Wert / Sensor-Wert comparison journal entry
Token Element	Cooperation — for completing the group ring walk together

Field	Detail
Active Competency Clusters	Environmental Literacy · Social-Emotional Learning
VAG Bridge Question	*"You estimated the soil temperature correctly within two degrees. When did you learn that? What else do you know about the living world that you have forgotten you know — and where does that knowledge live in you now?"*

Node 2 — Seeing What We Already Exchange

Field	Detail
Primary 4A Stage	ACKNOWLEDGMENT
Concentric Ring	Ring 1–2 (workshop space, Zone E)
Entry Condition	Has completed Node 1; ready to engage the economic dimension of everyday life
Linked Workshop	Token Economy — Living Guide 2 (Adults and Families: "Seeing What We Already Exchange")
Core Experience	"Seeing What We Already Exchange" workshop: participants map the non-monetary exchanges already present in their daily life (skills, food, time, knowledge, care, local wisdom); each exchange is mapped to one or more of the four token elements; full adult Values-Action Map (three-column format: what I know / what I do / what stands between); facilitator introduces the token economy as a system that makes these existing exchanges legible and honoured
Output / Evidence Artefact	Personal exchange map (A3 visual format, kept by participant); completed Values-Action Map; Cooperation and Reciprocity tokens from workshop participation recorded
Token Element	Reciprocity — for bidirectional exchange mapping (participant both contributes knowledge and receives recognition)
Active Competency Clusters	Economic Understanding · Social-Emotional Learning

Field	Detail
VAG Bridge Question	*"Three exchanges appeared on your map that you never thought of as economic before. Which of those would disappear — or shrink — if it had to be invoiced? What does that tell you about what conventional economics is currently failing to protect?"*

Node 3 — Values in Space

Field	Detail
Primary 4A Stage	ATTITUDE
Concentric Ring	Ring 3–4
Entry Condition	Has completed Node 2; ready for values-level engagement and bioregional framing; Personal Quality Commitment card introduced
Linked Workshops	Bioregion Mapping — Living Guide 2 (Adults and Families); Repair Café (learner or fixer role, first participation)
Core Experience	Bioregion boundary deliberation (Ring 4 walking transect, GPS device, at least 3 km); home garden comparison dataset (own garden soil data measured and entered into Erdpuls commons at next visit or by post); Personal Quality Commitment card completed; Repair Café first participation as learner (observing a skilled repair) or fixer (bringing an object to be repaired by an elder or skilled community member)
Output / Evidence Artefact	GPS transect data and boundary proposal for the Naturpark Schlaubetal sub-bioregion; home garden soil data entered into Erdpuls longitudinal open data record; Personal Quality Commitment card (retained by participant, copy held by Erdpuls); repaired object documentation with photograph
Token Element	Mutualism (home garden data contribution extends benefit to the Erdpuls bioregion record) + Regeneration (Repair Café repair demonstrably improves an object's functional life)
Active Competency Clusters	Environmental Literacy · Economic Understanding

Field	Detail
VAG Bridge Question	*"Your garden data shows the same pH shift we see in Zone B after heavy rain — you have been monitoring soil without knowing it. What else in your daily life might qualify as citizen science, if you recorded it? And what is the one thing on your Personal Quality Commitment card that you are most nervous about actually doing?"*

Node 4 — Token Holder and Community Anchor

Field	Detail
Primary 4A Stage	ACTION
Concentric Ring	Full campus — ongoing
Entry Condition	Has completed Nodes 1–3; ready to take an active programme role; token holder account activation
Linked Workshops	Token Holder status activation; Repair Café facilitator training; BNE Quality — Living Guide 2 (season-end Values-Action Map review); optional co-facilitation of adult Node 1 sessions
Core Experience	Token Holder status formally activated on the Stellar blockchain; Repair Café facilitator training (one day, with experienced Repair Café facilitator); season-end Values-Action Map review — comparison of Node 2 map with current map to identify what has moved; optional: co-facilitator role in adult Node 1 sessions under supervising lead facilitator
Output / Evidence Artefact	Active token holder account on Stellar with documented transaction history; recorded and evaluated Repair Café facilitation event; season-end VAG comparison document (showing movement between seasons, archived in participant portfolio); optional co-facilitation evaluation
Token Element	Regeneration (Repair Café facilitation increases community capacity for repair) + Mutualism (season-end evaluation data contributes to programme quality development)
Active Competency Clusters	Economic Understanding · Technology Competence · Social-Emotional Learning

Field	Detail
VAG Bridge Question	*"Compare your Values-Action Map from Node 2 with this one. What has actually moved from the knowing column to the doing column? What is still in the right-hand column — still standing between knowing and doing? Design one specific, concrete action for next season that targets the most stubborn remaining gap. Write it on your new Personal Quality Commitment card now, while the season is still in your body."*

Convergence zones for this group: Node 3 home garden data contributes directly to the longitudinal bioregion dataset used by Artists and Researchers (Target Group 4, Node 2) in their pattern documentation. The Repair Café facilitation role (Node 4) creates regular intergenerational contact with Elders and Intergenerational Groups (Target Group 3), generating Reciprocity tokens for craft-knowledge exchange in both directions. Token holders from this group are central to the annual Pattern Language Assembly as programme co-evaluators.

Target Group 3 — Elders and Intergenerational Groups

Ages: 60+ | Wisdom Circles, Memory Markets, mixed-age intergenerational sessions **Entry zone:** Zone E — Heritage and Community Hub; Ring 3 oral history walk **Tagline:** Elder memory as primary ecological science data

Context. Elders arrive with something that no other target group possesses: direct, lived memory of the landscape as it was. In a sub-bioregion that has undergone radical transformation — DDR collectivisation, post-reunification land use change, decades of ecological shift — elder memory is not anecdotal. It is primary research data. The pathway for this group is designed to honour this knowledge from the very first encounter, to make it legible as ecological science, and to create the intergenerational structures through which it flows to younger groups. The VAG for elders often takes a particular form: a rich sense of what has been lost combined with a sense of powerlessness about whether their knowledge can matter. The pathway converts this knowledge into consequential, archived, publicly verifiable contribution — a form of agency that many elder participants have not expected to find.

Node 1 — The Landscape Remembers

Field	Detail
Primary 4A Stage	AWARENESS

Field	Detail
Concentric Ring	Ring 3
Entry Condition	Elder participant or mixed-age group; elder participants have lived memory of the Naturpark Schlaubetal area or surrounding landscape
Linked Workshop	Questions to the Soil — Living Guide 3 (Elders and Intergenerational) — Elder Memory Prompts
Core Experience	Ring 3 oral history walk guided by Elder Memory Prompts: "What grew here when you were young?", "Where did the water flow differently?", "What species disappeared first?", "What changed most quickly after reunification?"; facilitator receives elder testimony without correction or interpretation; sensory comparison of current landscape against remembered landscape on the same walk
Output / Evidence Artefact	Elder Memory Record — oral testimony transcribed or recorded with elder's informed consent; Ring 3 annotated campus map with memory locations marked by the elder participant
Token Element	Reciprocity — elder gives landscape knowledge; younger participants give documentation, attention, and acknowledgment
Active Competency Clusters	Environmental Literacy · Social-Emotional Learning
VAG Bridge Question	*"You just described a species that is no longer here. Is that knowledge written down anywhere? What would be lost to the community — to the children's children of this town — if it stayed only in your memory? And who is the right person to sit with you and record it properly?"*

Node 2 — Memory as Science

Field	Detail
Primary 4A Stage	ACKNOWLEDGMENT
Concentric Ring	Ring 3–4

Field	Detail
Entry Condition	Has completed Node 1; ready for systematic documentation and cross-group encounter
Linked Workshop	BNE Quality — Living Guide 3 (Elders: "Was haben wir eigentlich gelernt?" / Memory Market); GIS Elder Memory Map session
Core Experience	Memory Market workshop: elder knowledge stations (plants, soils, traditional crafts, seasonal rhythms, pre-DDR and DDR land use knowledge) paired with participants from other target groups; Elder Memory Map session with Erdpuls facilitator — elder memory locations overlaid on current GIS campus and bioregion map; comparison with current iNaturalist species data from the same locations named in the elder's testimony
Output / Evidence Artefact	Memory Market exchange documentation (which knowledge was shared, by whom, to whom, with photographs); Elder Memory Map draft (GIS layer, attributed to elder participant with consent)
Token Element	Reciprocity (elder exchanges knowledge with younger participants in both directions) + Mutualism (Memory Market documentation enters Erdpuls programme commons as quality development data)
Active Competency Clusters	Environmental Literacy · Scientific Inquiry
VAG Bridge Question	*"Your memory of the willow stand by the stream matched exactly what the soil profile in that location still shows — your knowledge was scientific all along, it just was not being measured by the systems that call themselves science. What else do you know that has not been measured? And what format — a map, a story, a recorded conversation, a walk — would best hold that knowledge?"*

Node 3 — From Memory to Future

Field	Detail
Primary 4A Stage	ATTITUDE
Concentric Ring	Ring 3–4 (Erzählcafé, Zone E)

Field	Detail
Entry Condition	Has completed Node 2; ready to engage temporal projection and values-level reflection across generations
Linked Workshops	Token Economy — Living Guide 3 (Elders: Memory Market token integration); Wisdom Circle session; Erzählcafé
Core Experience	Wisdom Circle session with formal structure: past → present → future temporal arc facilitated across age groups present; intergenerational values dialogue ("What do we owe this landscape?", "What do we owe the next generation?", "What would need to change for this place to be recognisable to our grandchildren?"); Personal Stewardship Commitment card (elder-specific version of the Personal Quality Commitment); Erzählcafé contribution — elder shares one extended story for the Erdpuls archive
Output / Evidence Artefact	Wisdom Circle session record (collective reflection documented with consent); Personal Stewardship Commitment card (what the elder commits to sharing or contributing before knowledge is lost); contributed testimony archived in the Erzählcafé record
Token Element	Regeneration — Erzählcafé contribution preserves ecological and cultural memory for the community; this is the highest Regeneration token available to elders in the pathway
Active Competency Clusters	Social-Emotional Learning · Environmental Literacy
VAG Bridge Question	*"You described what you want to hand on. Now name the specific knowledge that is most at risk — the thing that lives only in your generation's memory and has not been documented. What format would preserve it most faithfully? And who at Erdpuls should sit with you to make sure it happens before the season ends?"*

Node 4 — Custodian of Place-Knowledge

Field	Detail
Primary 4A Stage	ACTION

Field	Detail
Concentric Ring	Full bioregion — OER publication and Pattern Language Assembly
Entry Condition	Has completed Nodes 1–3; elder has given consent for OER publication of memory materials; ready to take an active custodial role in the programme community
Linked Workshops	Elder Memory Map OER publication process; Wisdom Circle facilitator training; Pattern Language Assembly (January) — elder as pattern authenticator
Core Experience	Elder Memory Map published as OER with Creative Commons attribution to the elder participant (with full informed consent and right of withdrawal); Wisdom Circle facilitator role in subsequent elder and intergenerational sessions; pattern card custodian role — elder names, authenticates, and adds historical depth to pattern cards discovered by other target groups; Pattern Language Assembly participation as place-knowledge holder
Output / Evidence Artefact	Published OER Elder Memory Map with CC attribution; documented and evaluated Wisdom Circle facilitation session; authenticated pattern cards in programme commons (minimum 3, with elder's name and date of authentication recorded)
Token Element	Regeneration (OER publication makes place-knowledge permanently accessible) + Mutualism (Pattern Language Assembly contribution enriches the whole community's understanding of the sub-bioregion)
Active Competency Clusters	Environmental Literacy · Social-Emotional Learning · Technology Competence
VAG Bridge Question	*"Your memory map is now searchable by researchers, planners, children in this school, and communities in Poland you will never meet. What else should be in that map — and what is the one thing you most want future readers to understand about this landscape that no sensor will ever be able to measure?"*

Convergence zones for this group: Node 2 Memory Market is the primary multi-group convergence event, explicitly designed to bring Children and Youth (Node 3 or 4) and Adults and Families (Node 3 or 4) into structured exchange with elders. The elder testimony at Node 1 becomes the historical baseline against which the school class's spring Node 1 organism count is later interpreted. The Wisdom Circle facilitator role (Node 4) creates regular contact with all other target groups, and elder token holders serve as authenticators at the annual Pattern Language Assembly — the programme's most important cross-group convergence event.

Target Group 4 — Artists and Researchers

Ages: Any | Artist-in-Residence programme, Citizen Science extended projects, academic research
Entry zone: Full campus — sustained multi-session residency or research visit **Tagline:** Defamiliarisation and methodological depth as a public good

Context. Artists and researchers arrive with two capacities that distinguish them from other target groups: methodological rigour (the ability to design and sustain a systematic observation practice across time) and creative defamiliarisation (the ability to see the familiar as strange and to make the invisible visible through non-standard forms of representation). The VAG for this group often takes a particular form: the researcher who knows but does not act, or the artist who produces work about the environmental crisis without the work changing anything. The pathway is designed to ground both capacities in the specific living reality of the Naturpark Schlaubetal sub-bioregion — converting generic expertise into place-specific knowledge and place-specific contribution. Ring 0 body calibration is non-negotiable for this group, precisely because it is most uncomfortable for people who are accustomed to working conceptually.

Node 1 — Slowing Down to See

Field	Detail
Primary 4A Stage	AWARENESS
Concentric Ring	Ring 0–4 sustained (minimum 3 sessions, different times of day and conditions)
Entry Condition	First residency arrival or first research visit; professional practice background; no prior Erdpuls engagement required
Linked Workshop	Pattern Discovery Toolkit (full ring sequence at Goethean depth)
Core Experience	Full ring sequence at Goethean observation depth: sustained single-location observation at the same site across minimum 3 sessions in different weather and times of day; Ring 0 body calibration explicitly documented in daily journal for each session; Tier 1 sensory progression tracked with written distinction between perception (what was directly sensed) and interpretation (what was inferred); Sensor Dialogue with own body established as primary instrument before Tier 2 tools are introduced

Field	Detail
Output / Evidence Artefact	Daily observation journal (minimum 5 entries across minimum 3 sessions); Goethean observation field notes with explicit perception-vs-interpretation distinction maintained throughout; first Tier 1 / Tier 2 Sensor Dialogue record showing the comparison
Token Element	Cooperation — for structured observation protocol adherence within the programme framework
Active Competency Clusters	Environmental Literacy · Scientific Inquiry
VAG Bridge Question	*"What did the fifth visit to this site show that the first visit did not? What did your body notice that your notebook initially failed to record? And what would be different about your professional practice — your research questions, your artistic decisions — if this kind of sustained sensory attention were the entry point rather than the literature review?"*

Node 2 — Patterns Beyond Disciplines

Field	Detail
Primary 4A Stage	ACKNOWLEDGMENT
Concentric Ring	Ring 2–4
Entry Condition	Has completed Node 1; ready to engage interdisciplinary synthesis and open data contribution
Linked Workshops	Pattern Discovery Toolkit (pattern card methodology); GIS layer integration session with Erdpuls facilitator

Field	Detail
Core Experience	Non-standard cartography session: artist-researcher maps the campus and sub-bioregion using their own discipline's perceptual categories (acoustic space, quality of light at different times of day, proxemic comfort and discomfort zones, aesthetic charge, narrative association, historical sedimentation); GIS layer integration session in which the non-standard map is overlaid with existing iNaturalist species data and openSenseMap atmospheric data; pattern documentation across multiple media (photograph, drawing, written description, audio recording)
Output / Evidence Artefact	Non-standard cartographic work (physical, digital, or hybrid format) contributed to Erdpuls pattern documentation archive; minimum 3 pattern cards named, described, and contributed to the programme commons; minimum 1 open data contribution to the Erdpuls longitudinal record
Token Element	Mutualism — for open data contribution (extends benefit to the global citizen science infrastructure) and for pattern card commons entry (enriches the collective pattern language)
Active Competency Clusters	Environmental Literacy · Technology Competence · Scientific Inquiry
VAG Bridge Question	*"Your acoustic map and the soil pH map show the same boundary — the same line, discovered by two completely different methods. This was not a coincidence. What is the pattern that connects them? Who needs to know about it — which researcher, which planner, which community — and what is preventing you from telling them right now?"*

Node 3 — Value Beyond Price

Field	Detail
Primary 4A Stage	ATTITUDE
Concentric Ring	Ring 1–3 (workshop space and community)
Entry Condition	Has completed Node 2; ready for critical economic and community engagement

Field	Detail
Linked Workshop	Token Economy — Living Guide 4 (Artists and Researchers: "Value Beyond Price")
Core Experience	"Value Beyond Price" workshop: structured critical examination of what market price does and does not measure in the context of artistic and research practice; four-element token economy design exercise applied specifically to the artist-researcher's own work (which elements does this work generate — Cooperation, Reciprocity, Mutualism, Regeneration?); facilitated critical dialogue on the four documented tensions (tokenisation and artistic autonomy; social credit analogies; the colonial knowledge-extraction dynamic; the scalability question); community integration session — the artist-researcher participates as an equal in at least one session designed for another target group
Output / Evidence Artefact	Written responses to the four critical dialogue questions (documented and archived as programme quality development input); token economy design sketch for own practice (which elements, which activities, which recognition pathways); community integration session record with reflections from the other-group participants
Token Element	Reciprocity (community integration session generates bidirectional exchange) + Mutualism (critical dialogue contribution enriches programme quality development)
Active Competency Clusters	Economic Understanding · Social-Emotional Learning
VAG Bridge Question	*"You described your work as autonomous. Now describe it as embedded in the community and ecosystem that made it possible — the community that provided the landscape, the stories, the historical memory, the biological specimens. What changes in the description? What obligations appear? And what specifically would you do differently if those obligations were as visible as your bibliography?"*

Node 4 — Residency as Living Research

Field	Detail
Primary 4A Stage	ACTION

Field	Detail
Concentric Ring	Full bioregion → OER commons → Pattern Language Assembly
Entry Condition	Has completed Nodes 1–3; has given Creative Commons licensing agreement for residency output; ready to produce and publish output that returns value to the community
Linked Workshops	OER publication process; GIS synthesis session; Pattern Language Assembly (January)
Core Experience	Residency output developed and published as OER with Creative Commons Attribution-ShareAlike attribution (CC BY-SA 4.0) and the artist-researcher named as author; GIS synthesis of all pattern language contributions accumulated across the full residency period — the single most important integration document in the annual pattern language cycle; Pattern Language Assembly presentation of findings to all five target groups and facilitators; optional: sensor station design contribution to the Erdpuls IoT network (senseBox node, documented and installed with facilitator)
Output / Evidence Artefact	Published OER residency output accessible at persistent URL or Zenodo DOI; full-residency pattern language synthesis (GIS map with narrative description); Pattern Language Assembly presentation (slides, video, or documentation artefact); optional sensor station technical documentation
Token Element	Regeneration (OER publication permanently extends the community's access to place-knowledge) + Mutualism (Pattern Language Assembly synthesis makes visible the pattern language generated collectively across all five groups)
Active Competency Clusters	Environmental Literacy · Scientific Inquiry · Technology Competence · Economic Understanding
VAG Bridge Question	*"Your work is now searchable by anyone in the world. Which of the five target groups at Erdpuls is most likely to encounter it — the school child, the elder, the Repair Café participant, the cross-border delegation? What do you most want them to find in it? And what did you learn from being at Erdpuls that your discipline had not previously given you a language to say?"*

Convergence zones for this group: The Artist-Researcher is the primary producer of the GIS synthesis that integrates all other groups' data into a single annual pattern language document. At Node 3 community integration, the artist-researcher participates as an equal in sessions with Children and Youth, Adults and Families, or Elders and Intergenerational Groups, generating Reciprocity token flows in all

directions. The "Value Beyond Price" critical dialogue contributes directly to programme quality development (BNE 5.1), making artists and researchers active programme co-designers rather than recipients.

Target Group 5 — Cross-Border DE/PL Groups

Ages: Any | Mixed German-Polish groups, bilateral exchange programmes, educational professionals
Languages: Trilingual — German / English / Polish (DE/EN/PL) **Entry zone:** Zone E — Heritage and Community Hub; balanced DE/PL composition required **Tagline:** One landscape, two languages, a shared future

Context. Cross-border groups arrive from both sides of the Oder-Neisse border, typically as part of a bilateral exchange programme. They bring the most complex social and cultural dynamic of any target group: two national frameworks for sustainability education (the German BNE quality catalog system and the Polish environmental education tradition), two official languages plus English as a potential bridge language, different proxemic norms shaped by their different cultural backgrounds, and the full weight of the shared history of this border region. The VAG for this group is compounded by a cross-cultural dimension: not only the individual gap between values and action, but the institutional gap between what each national tradition values and the collaborative action that the shared glacial landscape requires. The pathway uses this complexity as a learning resource, not an obstacle. The Naturpark Schlaubetal landscape — which predates the border by geological time — is the shared ground from which the pathway grows.

Node 1 — One Landscape, Two Languages

Field	Detail
Primary 4A Stage	AWARENESS
Concentric Ring	Ring 0–1 (trilingual)
Entry Condition	Mixed DE/PL group; balanced composition (minimum 40% from each national side); bilingual or trilingual facilitators present; first joint session
Linked Workshop	Questions to the Soil — Living Guide 5 (Cross-Border Groups); trilingual Ring 0 calibration protocol

Field	Detail
Core Experience	Introduction to the shared glacial landscape: the sub-bioregion as common ground that predates the border by hundreds of thousands of years; trilingual Ring 0 body calibration — participants document sensory observations in their own language, then exchange; multilingual Life Count (same organisms named in German, Polish, and English simultaneously); soil observation conducted in mixed pairs (one German, one Polish participant per pair); proxemic observation notes — facilitator names and normalises the different proxemic norms present in the room as a learning resource
Output / Evidence Artefact	Trilingual Life Count record (DE/EN/PL) with organism names in all three languages; individual Ring 0 calibration notes in own language; first cross-cultural proxemic observation documented in field notes
Token Element	Cooperation — for completing the joint Life Count across the language boundary
Active Competency Clusters	Environmental Literacy · Social-Emotional Learning
VAG Bridge Question	*"You just used three languages to describe the same living organism. Which description felt most alive to you — and why might that matter for the science? What does it tell us that the landscape does not care which language we name it in?"*

Node 2 — Frameworks That Converge

Field	Detail
Primary 4A Stage	ACKNOWLEDGMENT
Concentric Ring	Ring 2–4 (workshop and bioregion)
Entry Condition	Has completed Node 1; ready for comparative framework engagement and cross-border data contribution
Linked Workshops	BNE Quality — Living Guide 5 (Cross-Border: "Quality Without Borders"); cross-border iNaturalist project protocol

Field	Detail
Core Experience	"Quality Without Borders" workshop: each national delegation presents its sustainability education framework to the other in non-technical, accessible format (15 minutes per side); joint identification of minimum 5 converging principles across the two frameworks (same principle, different terminology) and minimum 2 genuine divergences (different values or priorities); shared bioregion boundary deliberation using Ring 4 methodology — where does the shared ecological community end?; cross-border citizen science data contribution — iNaturalist observations linked from both sides of the border into a shared project
Output / Evidence Artefact	Framework comparison matrix (minimum 5 convergences, minimum 2 divergences, bilingual); cross-border bioregion boundary proposal with criteria stated in both languages; iNaturalist observations from both national sides linked in a shared cross-border project
Token Element	Mutualism (cross-border citizen science contribution extends benefit beyond both national communities) + Reciprocity (framework exchange generates bidirectional institutional learning)
Active Competency Clusters	Environmental Literacy · Social-Emotional Learning · Scientific Inquiry
VAG Bridge Question	*"Your two frameworks agreed on the same principle but called it completely different things. What was lost in that naming difference — what coordination has been prevented by the terminology gap? And what would it mean, institutionally and practically, to act on that converged principle together rather than separately?"*

Node 3 — Designing Cross-Border Reciprocity

Field	Detail
Primary 4A Stage	ATTITUDE
Concentric Ring	Zone E — shared meal; Workshop space
Entry Condition	Has completed Node 2; ready for collaborative design work and values-level engagement across the cultural boundary

Field	Detail
Linked Workshop	Token Economy — Living Guide 5 (Cross-Border: "One Economy, Two Languages"); shared meal protocol
Core Experience	"One Economy, Two Languages" cross-border token economy design workshop: mixed working groups (DE/PL balanced) design the basic parameters of a reciprocal economy that operates across the border — which activities would be recognised, how would the Collective Threshold Model function across the border, could a token earned in Germany be recognised in Poland?; cultural proxemic differences explicitly named and used as design input (what spatial arrangements feel safe and productive in each cultural context?); shared meal prepared jointly by both delegations as an embodied reciprocal economy — the meal is itself the economic model; bilateral Personal Quality Commitment cards signed by participants from both sides
Output / Evidence Artefact	Cross-border token economy design document (minimum 2 pages, bilingual DE/PL); shared meal documentation with photograph; bilateral Personal Quality Commitment (signed by participants from both national sides, one copy each)
Token Element	Cooperation + Reciprocity + Mutualism — all three elements are simultaneously present in the shared meal and the design session
Active Competency Clusters	Economic Understanding · Social-Emotional Learning
VAG Bridge Question	*"The meal crossed the border because you crossed the border first — not with euros and złoty, but with skills, food, and conversation. What else that currently stops at the border would you like to see crossing it? And what, specifically, is preventing that crossing right now — is it legal, institutional, relational, or financial?"*

Node 4 — Partnership as Infrastructure

Field	Detail
Primary 4A Stage	ACTION
Concentric Ring	Full bioregion and institutional

Field	Detail
Entry Condition	Has completed Nodes 1–3; delegations have mandate from their institutions to propose formal partnership; ready to produce documents that constitute lasting programme infrastructure
Linked Workshops	Cross-border quality principles OER production; INTERREG or bilateral partnership proposal drafting; reciprocal facilitation exchange protocol
Core Experience	Shared cross-border quality principles document produced (minimum 5 principles, bilingual DE/PL, published under CC BY-SA 4.0); formal partnership proposal framework drafted for INTERREG or bilateral programme funding; cross-border citizen science network design document produced; reciprocal facilitation exchange: a German-side facilitator leads one session at the Polish partner site; a Polish-side facilitator leads one session at Erdpuls Müllrose (both events documented and evaluated)
Output / Evidence Artefact	Bilingual cross-border quality principles document (OER-licensed, publicly accessible); partnership proposal framework document; cross-border citizen science network protocol; documented reciprocal facilitation event (evaluation from both sides)
Token Element	Regeneration (OER publication makes cross-border quality principles permanently accessible) + Mutualism (cross-border citizen science network extends data contribution infrastructure beyond both national sites)
Active Competency Clusters	Economic Understanding · Social-Emotional Learning · Technology Competence
VAG Bridge Question	*"You now have a working document, a network, and a facilitation exchange. What is the one specific barrier that remains between this and a permanent, institutionally supported cross-border programme? Who in this room — or who can be reached from this room — has the power to address that barrier? And what happens if you leave today without naming that person and making the ask?"*

Convergence zones for this group: The cross-border iNaturalist data (Nodes 2 and 4) extends the Erdpuls longitudinal dataset across the border, creating the most geographically expansive contribution to the bioregion commons of any target group. The framework comparison work (Node 2) becomes a resource for Artists and Researchers (Target Group 4) who integrate it into their non-standard cartographies and pattern documentation. The cross-border facilitation exchange (Node 4) creates a permanent personnel link between Erdpuls and Polish partner sites, enabling future joint programming across all five target groups and on both sides of the Oder-Neisse border.

Part 4 — Cross-Group Convergence Map

The cross-group convergence zones are the programme's highest-value learning moments. They are the events where individual pathways meet the living community, where the VAG closes not through individual effort alone but through the mutual recognition and exchange that the Ubuntu principle — *I am because we are* — describes. The table below maps all primary convergence zones across the five pathways, showing which groups meet, what is exchanged, which token flows are generated, and which pathway nodes are active at each event.

Programme Event	Groups Converging	What Is Exchanged	Token Flows	Active Pathway Nodes
Memory Market	Elders and Intergenerational (TG3) + Classes 5–8 (TG1b) + Adults and Families (TG2)	Elder landscape knowledge ↔ systematic investigation skills ↔ intergenerational care	Reciprocity and Mutualism in all directions	TG1b: N4 · TG2: N3 · TG3: N2
Seasonal Observational Cycle	All target groups and grade bands (sequential visits to the same soil patch across one growing season)	Spring baseline (TG1a, Classes 1–4) → summer systematic investigation (TG1b, Classes 5–8 + TG2) → sustained residency practice (TG4) → autumn elder memory layering (TG3) → cross-border extension (TG5)	Mutualism tokens for all data contributions entering the Erdpuls longitudinal commons	All groups: N2–N3

Programme Event	Groups Converging	What Is Exchanged	Token Flows	Active Pathway Nodes
Cross-Band Co-Facilitation	Classes 9–12 (TG1c) facilitating Classes 1–4 (TG1a) or Classes 5–8 (TG1b) sessions	Research expertise and independent judgment (TG1c) ↔ sensory curiosity and fresh observation (TG1a / TG1b)	Regeneration (TG1c earns for increasing programme teaching capacity) + Cooperation (facilitated group)	TG1c: N4 · TG1a/b: N1–N2
Repair Café	Adults and Families (TG2) + Elders and Intergenerational (TG3) + Classes 9–12 advanced (TG1c)	Craft knowledge and repair skills (Elders) ↔ facilitation capacity (Adults) ↔ technical curiosity (Upper Secondary)	Reciprocity (craft exchange) + Regeneration (repaired objects and extended product life)	TG1c: N4 · TG2: N3–N4 · TG3: N3
Annual Pattern Language Assembly (January)	All target groups and grade bands + programme facilitators	Pattern cards from all groups synthesised; elder authentication of historical patterns; Classes 9–12 GIS synthesis; artist-researcher integration; cross-border framework comparison contributed	Mutualism tokens for all contributions to the collective pattern language; Regeneration for Assembly co-facilitation	All groups: N4

Programme Event	Groups Converging	What Is Exchanged	Token Flows	Active Pathway Nodes
Community Integration Session (Residency)	Artists and Researchers (TG4) + any one other target group or grade band	Professional research or artistic method ↔ embodied local and elder knowledge; defamiliarisation of the familiar ↔ intimacy with place	Reciprocity tokens in both directions	TG4: N3 · Other group: varies by context
Cross-Border Facilitation Exchange	Cross-Border DE/PL (TG5) + any group facilitated on German or Polish side	German facilitation methods ↔ Polish educational tradition; cross-border bioregion data extension to Polish-side platforms	Mutualism (network creation) + Regeneration (institutional infrastructure built)	TG5: N4 · Facilitated group: varies

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This document and its translations were developed with assistance from Claude (Anthropic PBC). All strategic decisions, philosophical positions, and project commitments are those of the author.

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