Pattern Discovery Toolkit

Parts 1-5: Theory, Method, and Field Application

ERDPULS MÜLLROSE

Center for Sustainability Literacy, Citizen Science & Reciprocal Economics

Discovering a Pattern Language of Place

A Transferable Toolkit for Sustainability Literacy and Citizen Science

Developed at Erdpuls Müllrose — Living Laboratory & Makerspace Garden

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Changelog

Version	Date	Changes
1.3	February 2026	Anthroposophical integration: new Section 1.7 (The 4A-Pathway and Anthroposophical Developmental Foundations), 4A-Pathway orientation notes added to each Ring section and Closing, Rudolf Steiner entry added to Part 5
1.2	February 2026	BNE compliance update: new Section 1.6 (Program Overview), new Section 2.6 (Closing and Full-Cycle Reflection), explicit SDG and four-dimension alignment, participant self-determination principle, controversy as named pedagogical feature, participant feedback guidance, expanded Part 5 BNE entry
1.1	February 2026	Institution name updated; license footer added; version updated for OER publication; major proxemic integration: new Section 1.5, expanded Ring 0, rewritten Part 5
1.0	October 2025	Initial release

Preface: Why This Toolkit Exists

Most sustainability education begins with global abstractions — carbon cycles, SDG frameworks, planetary boundaries — and asks learners to apply them locally. This toolkit inverts the direction. It begins at the center — the ground beneath your feet, the wall beside your hand, the water you can hear — and moves outward through concentric rings of attention until participants have collectively discovered and defined the living patterns of their sub-bioregion.

Research on sustainability literacy consistently identifies a values-action gap: the majority of people in Europe report that they value sustainability, yet only a fraction act on it in their daily choices. This gap is not primarily a knowledge deficit — it is an *attention* deficit. People know about climate change, biodiversity loss, and soil degradation in the abstract but have little embodied, sensory familiarity with the living systems near them. The toolkit is designed to close this gap by building place-based ecological knowledge from the ground up.

The method draws on Christopher Alexander's insight that every living environment is sustained by a web of recurring spatial, social, and ecological relationships — a *pattern language*. But we depart from Alexander in one crucial respect: we do not arrive with a pattern language to impose. We arrive with a method for discovering one. Every culture, every community, every landscape holds its own patterns. The phenomenological approach — careful, embodied, pre-theoretical observation — is how we find them.

The output of this process is not a report to be filed. It is a collectively authored, place-specific pattern language: a practical document that names the relationships that make a particular place alive, records the evidence (sensory and instrumental) that supports each pattern, and proposes how those patterns might be maintained, restored, or extended. It is simultaneously an act of citizen science, a sustainability literacy exercise, and a community-building practice.

This toolkit was prototyped at Erdpuls Müllrose, Brandenburg, Germany, at the gateway to the Naturpark Schlaubetal. But the method is designed to be transferable. Where we describe the specific rings of attention we used in Müllrose, other initiatives should understand these as *examples of the method*, not prescriptions. Your center will be different. Your rings will be different. Your patterns will be your own.

Part 1: Foundations

1.1 What Is a Pattern Language?

Christopher Alexander and his co-authors proposed in *A Pattern Language* (1977) that good human environments emerge from the interplay of recurring solutions to recurring tensions. A pattern is not a rule or a blueprint. It describes a relationship between a context, a problem (or tension), and a resolution that has been observed to work — repeatedly, in different hands, over time.

Patterns exist at every scale: from how a window relates to a wall, to how a town relates to its watershed. They connect to one another: a pattern at one scale creates the context for patterns at the next scale down. Together, they form a language — a generative system that allows people to compose new wholes from familiar elements.

Alexander's 253 patterns were drawn from observation of built environments primarily in Europe and North America. They are valuable but culturally situated. The deeper contribution is not the specific patterns but the *grammar* — the recognition that such languages exist everywhere, and that they can be discovered through disciplined attention.

The central claim of this toolkit: Every place has a pattern language. It may be legible in the arrangement of fields and hedgerows, in the seasonal rhythms of a community, in the way water moves through soil, in the stories elders tell about how things used to be done, or in the data streaming from an environmental sensor. The task is not to invent patterns but to notice them.

1.2 Phenomenological Observation as Method

Phenomenology, as developed by Husserl and Merleau-Ponty, insists that genuine knowledge of the world begins not with theory but with *description of experience as it presents itself*. Before we explain, we must observe. Before we categorize, we must attend.

In the context of this toolkit, the phenomenological method means:

Observation before analysis. Participants are asked first to describe what they perceive — through all senses — before offering explanations or judgments. What do you see, hear, smell, feel in this place? Not "what do you know about" this place, but what does it *show* you right now?

The body as instrument. Environmental sensors measure temperature, humidity, soil moisture, air quality. The human body also measures these things, though differently. The toolkit treats both as valid instruments and places them in dialogue. A thermometer says 14°C; your skin says "cool but sheltered here, exposed there." Both observations matter. The gap between them is where learning happens.

Suspension of habitual seeing. Most of us move through familiar places without truly perceiving them. The phenomenological discipline asks participants to encounter even the most familiar environment as if for the first time — to notice what habit has made invisible. This is closely related to the Goethean scientific method, which Goethe called *zarte Empirie* (delicate empiricism): a way of knowing that lets phenomena speak for themselves before the observer imposes categories.

Multilingual and multicultural perception. Different languages and cultural traditions parse the world differently. A pattern named in Polish may capture something that the German name misses, and vice versa. In cross-cultural and cross-border settings, this plurality is not a problem to solve but a resource to use. The toolkit encourages participants to name patterns in their own language first, then discuss what the translations reveal or conceal.

1.3 Citizen Science as Grounding Practice

Phenomenological observation is subjective by design — it attends to how the world appears to a particular perceiver. Citizen science complements this with structured, reproducible, shareable data collection. Together they form a complete practice:

- Phenomenological observation generates hypotheses ("this corner of the garden feels different — warmer, more sheltered, richer in insect life").
- Citizen science instruments test and extend these hypotheses ("the soil temperature sensor confirms a 3°C differential; the species count shows 40% more pollinators").
- The data, in turn, raises new phenomenological questions ("why does this micro-climate exist? What can I observe about the wind, the wall orientation, the planting that explains it?").

This reciprocal movement between experience and data is not a compromise between "soft" and "hard" knowledge. It is a more complete way of knowing a place than either alone.

The toolkit assumes that participating initiatives have access to at least basic environmental sensing (even a smartphone with a weather and species identification app suffices). More developed sensor networks (IoT, LoRaWAN, senseBox-type platforms) enrich the process but are not prerequisites.

1.4 The Concentric Ring Structure

The workshop method moves outward through concentric rings of attention, from the most intimate and immediate to the most expansive. At each ring, participants practice the same cycle:

Observe → Name the Pattern → Record → Cross-Reference → Reflect

The number and character of the rings will vary by site. What matters is the principle: *start from the center*. Do not begin with maps, plans, or abstractions. Begin with the ground, the body, the immediate surround.

A typical sequence might include:

Ring	Scale	Focus
0	The Body	Embodied perception as calibration instrument
1	The Site	The immediate built and cultivated environment
2	The Garden / Near Landscape	Ecological relationships in the cultivated-to-wild gradient
3	The Settlement	The town or village as pattern-rich environment
4	The Sub-Bioregion	Watershed, geology, ecology, and culture as defining boundaries

Each initiative should adapt these rings to its own geography and purpose. An urban initiative might have "The Block" and "The Neighborhood" where a rural one has "The Garden" and "The Fields." A coastal initiative might organize rings around the land-sea gradient. The method is the constant; the content is always local.

Participant self-determination. Within each ring, participants are not directed toward pre-determined findings. The pattern-finding prompts are open questions, not curricula. Participants co-determine what counts as significant, what names patterns should bear, and which connections deserve recording. This self-determination is not merely a pedagogical nicety — it is the epistemological basis of the method. A pattern language that participants have not themselves discovered and named is not their pattern language; it is someone else's, imposed.

1.5 Proxemics as Spatial Grammar

Christopher Alexander gives us a grammar for patterns at environmental scale — how a window relates to a wall, how a settlement relates to its watershed. But between the body (Ring 0) and the building (Ring 1), between the building and the community (Ring 3), another spatial grammar operates: the grammar of human proximity, sensory reach, and culturally patterned distance.

Edward T. Hall, the cultural anthropologist who coined the term "proxemics" in 1963, defined it as "the interrelated observations and theories of humans' use of space as a specialized elaboration of culture." In *The Hidden Dimension* (1966), Hall demonstrated that the distances humans maintain from one another are not arbitrary but structured into zones, each with a distinct sensory profile and communicative significance.

Hall's four distance zones — intimate (0–45 cm), personal (45 cm–1.2 m), social (1.2–3.7 m), and public (3.7 m+) — are not merely spatial measurements. Each zone activates a different configuration of sensory channels:

Zone	Distance	Sensory Profile
Intimate	0–45 cm	Touch, smell, body heat, whispered voice, fine visual detail
Personal	45 cm–1.2 m	Soft voice, moderate detail, some thermal, selective touch
Social	1.2–3.7 m	Normal voice, full-body vision, no thermal or olfactory
Public	3.7 m+	Loud voice or amplification, panoramic vision only

Why this matters for the toolkit: The concentric rings of the pattern-discovery process are not only spatial scales — they are sensory regimes. As participants move outward from Ring 0 (the body) to Ring 4 (the bioregion), sensory channels progressively close. At Ring 0, all channels are open: you can touch,

smell, taste, hear, and see the soil in your hand. At Ring 4, only vision remains: you cannot smell a watershed boundary, but you can see it from a hilltop. This progressive closure is a proxemic phenomenon with direct pedagogical implications.

When engagement drops during a workshop — when participants who were absorbed during the soil protocol become restless during the bioregion mapping — the cause is often proxemic: they have moved from an intimate/personal sensory regime (all channels active, high engagement) to a public one (vision-only, lower embodied engagement) without the transition being scaffolded. Facilitators who understand the sensory gradient can intervene: bring something to touch at Ring 3 (a building material, a heritage artifact); bring something to smell at Ring 4 (soil from the proposed bioregion boundary). Each sensory reactivation restores proxemic intimacy within a larger spatial frame.

The rings as proxemic zones of place-relationship:

Ring	Scale	Proxemic Zone	Sensory Channels
Ring 0 (Body)	The observer as instrument	Intimate zone — with oneself and with the ground	All channels: touch, smell, thermal, sound, sight
Ring 1 (Site)	Patterns of built environment	Personal zone — with walls, materials, micro-climate	Touch, detailed vision, thermal, some olfactory
Ring 2 (Garden/ Near Landscape)	Patterns of cultivation and ecology	Transitional — personal to social	Touch (soil, plants), smell (garden), sound (insects, wind), sight
Ring 3 (Settlement)	Patterns of community and heritage	Social zone — with neighbors, community spaces	Normal voice, full vision, gestural communication
Ring 4 (Sub- Bioregion)	Patterns of watershed and geology	Public zone — with landscape and horizon	Vision dominant; sound of wind, water at distance

Alexander shows us *what* to observe at each scale. Hall shows us *how* we observe at each scale — which senses are available, which fade, and how the quality of attention shifts. Together, they provide a complete spatial theory: from the body's relationship with the ground to the community's relationship with its bioregion.

The cultural dimension: Hall's deepest insight is that proxemic behavior is culturally patterned. The distances at which people feel comfortable, the sensory signals they attend to, the meaning they assign to spatial arrangements — all vary across cultures. This is directly relevant to the toolkit's cross-border and

multicultural applications. When German and Polish participants kneel side by side during a soil observation — shoulders 30 cm apart, hands in the same earth — they have entered each other's personal proxemic zone across a cultural boundary. The soil mediates this crossing. That mediation is one of the most powerful pedagogical mechanisms the toolkit deploys, and proxemics gives us the vocabulary to understand why it works.

Sociofugal and sociopetal space: Hall and Robert Sommer distinguished between sociopetal space (which draws people together — circular seating, shared worktables, campfire layouts) and sociofugal space (which pushes people apart — rows facing forward, individual workstations, corridors). Every workshop space, every zone on the campus, every arrangement of chairs and tables is either gathering people or dispersing them. The facilitator who understands this distinction can design spatial arrangements that serve the pedagogical purpose of each phase: sociopetal circles for the Wisdom Circle and the boundary deliberation; sociofugal dispersal for the solo observation phase of Ring 0; and the transition between them as a deliberate proxemic choreography.

Vertical proxemics: Hall noted that vertical distance communicates power. Looking down on someone asserts dominance; being at the same level communicates equality. This has immediate implications for facilitation across target groups: kneeling with children during soil observation; bringing samples to a seated elder at comfortable height; ensuring that intergenerational pairings have the elder seated (above) while the younger participant does physical ground work (below) — inverting the usual age-power dynamic in which youth tower over elders.

1.6 Program Overview

This section provides a compact reference for facilitators, partners, and funders who need to situate the toolkit within formal quality and curriculum frameworks. It draws on the four sustainability dimensions, the UN Sustainable Development Goals, and the Brandenburg BNE Quality Catalog (*Qualitätskatalog*, MLUK, April 2023). A full evidence-based alignment is provided in **Appendix D** of the companion appendices document.

Target Groups

The toolkit is designed to serve five target groups. Each group can engage with the full ring sequence or with selected rings adapted to their needs and contexts:

Target Group	Typical Ages	Primary Entry Points
Children and Youth	8–18	Rings 0–2; soil protocol; species identification
Adults and Families	18+	Full ring sequence; historical layering; sensor dialogue

Target Group	Typical Ages	Primary Entry Points
Elders and Intergenerational Groups	60+ and mixed	Ring 3 oral history; Ring 4 temporal layering; elder memory transects
Artists and Researchers	Any	Full ring sequence; pattern documentation; GIS synthesis
Cross-Border DE/PL Groups	Any	Multilingual pattern naming; Ring 4 boundary deliberation

Minimum group size: 4. Optimal: 8–20. Maximum before splitting into sub-groups: 25.

Duration Options

Format	Rings Covered	Duration	Suitable For
Taster	Rings 0–1 only	Half day (3–4 h)	First contact; school groups
Extended	Rings 0–3	Full day (6–8 h)	Community days; adult groups
Full sequence	Rings 0–4 + Closing	3–5 days	Residential programs; researcher groups
Longitudinal	Full sequence × multiple seasons	Ongoing	Citizen science; OER documentation

Four Sustainability Dimensions

The toolkit integrates all four dimensions of sustainability as defined by the Brandenburg BNE framework (BNE 2.1.1):

Dimension	How the Toolkit Addresses It
Ecological	Soil observation, species identification, microclimate mapping, watershed delineation, biodiversity documentation, IoT sensor networks
Social	Community pattern-finding (Ring 3), elder oral history, cross-cultural proxemic encounter, collective map-making, Ubuntu philosophy of relational selfhood
Economic	Token-based reciprocal economy (Appendix B), repair culture observation, land-use history, cultural and economic flow mapping (Ring 4)

Dimension	How the Toolkit Addresses It
Cultural	Multilingual pattern naming, heritage building observation, place-name etymology, traditional ecological knowledge, cross-border cultural comparison

SDG Alignment

The toolkit directly addresses the following UN Sustainable Development Goals (BNE 2.1.3):

SDG	Connection
SDG 4 — Quality Education	Core purpose: building sustainability literacy through embodied, experiential, citizen-science-integrated learning
SDG 11 — Sustainable Cities and Communities	Settlement pattern analysis (Ring 3): land use, heritage, public space, community resilience
SDG 13 — Climate Action	Microclimate and soil temperature monitoring; phenological observation; longitudinal climate proxy data
SDG 15 — Life on Land	Biodiversity documentation, soil health observation, watershed mapping, Naturpark Schlaubetal as reference landscape
SDG 17 — Partnerships for the Goals	Citizen science platform contributions (iNaturalist, openSenseMap); cross-border DE/PL cooperation; OER publication

Additional connections: **SDG 3** (wellbeing through nature contact), **SDG 6** (watershed mapping, water literacy), **SDG 10** (intercultural encounter, cross-border inclusion).

BNE Quality Areas Addressed

The toolkit addresses all seven quality areas of the Brandenburg BNE Quality Catalog. All minimum requirements are met. See Appendix D for the full criterion-by-criterion mapping.

Area	Title	Status
1	Goals and Target Groups	✅ All criteria met
2	Approach	✅ All criteria met
3	Methods	✅ Minimum requirements met; 11/13 fully
4	Gestaltungskompetenz (Design Competencies)	✅ All 12 sub-competencies addressed

Area	Title	Status
5	Quality Development	✅ Minimum requirements met
6	Facilitator Qualification	✅ Minimum requirements met
7	Organisational Conditions	✅ Minimum requirements met

1.7 The 4A-Pathway and Anthroposophical Developmental Foundations

The 4A-Pathway

Every educational sequence in this toolkit follows a four-stage pathway. It is the spine that connects Ring 0 to the Closing, and the thread that connects a single workshop day to a year of seasonal returns:

Stage	Question	Function in the Toolkit
Awareness	*What is here?*	Direct, pre-conceptual sensory encounter — Ring 0 body calibration; first contact with soil, wall, or landscape
Acknowledgment	*How does this connect to me?*	Recognition that what was observed matters personally, locally, ecologically — sensor dialogue; pattern naming
Attitude	*What does this mean for how I want to live?*	Values reflection; contested pattern dialogue at Ring 3; collective boundary deliberation at Ring 4
Action	*What will I do because of this?*	Documented output — pattern card, citizen science contribution, commitment card; return across seasons

The pathway is not a one-time linear arc. It spirals. A participant who reaches Awareness with a particular patch of soil or a particular building pattern may return a season later and move into Acknowledgment and Attitude with the same phenomenon. A participant who has worked through all four stages with the site's Ring 1 patterns begins the Ring 4 exercise again at Awareness — this time with the sub-bioregion as the phenomenon. The progression is recursive, not terminal.

The pathway across target groups. Facilitators should calibrate the depth and pace of the pathway to the group at hand. With children aged 8–11, the primary achievement of a session is genuine Awareness — a real sensory encounter, uncontaminated by received explanations. With adolescents and adults encountering the site for the first time, the session can move through Awareness and begin

Acknowledgment within a single day. Returning participants — particularly elders revisiting landscapes they have known for decades — often begin in Attitude and need support reaching Action rather than Awareness.

Anthroposophical Developmental Foundations

The 4A-Pathway's calibration to different participant groups draws on Rudolf Steiner's developmental stage framework, first articulated in *Die Erziehung des Kindes vom Gesichtspunkte der Geisteswissenschaft* (1907) and elaborated in the pedagogical lectures collected as *Allgemeine Menschenkunde* (1919).

Note for facilitators: This framework is used here as a developmental psychology, not a theological or metaphysical commitment. Facilitators do not need to be familiar with anthroposophy or Waldorf education to apply its practical implications. The developmental insights it offers are independently corroborated in contemporary cognitive science, embodied learning research, and experiential education theory. The framework is invoked because it is precise, practical, and directly applicable to multi-age, multi-group sustainability education.

Steiner proposed that human development unfolds through three broad phases, each characterized by a dominant cognitive-affective mode:

Phase	Age Range	Dominant Mode	Relationship to Knowledge
Will-forces predominant	Early childhood (~6–11)	Learning through doing, imitation, and embodied sensation. The world is experienced as fundamentally good and trustworthy. Abstract concepts do not yet land.	Knowledge must arrive through the hands and the senses before it can enter the mind
Feeling / Rhythmic forces awakening	Middle childhood–adolescence (~11–18)	Causal thinking emerges; peer identity is central; "why" questions multiply; abstract reasoning becomes available but is most powerful when anchored in felt experience	Knowledge arrives most deeply when it is emotionally significant — when it matters, not just when it is true

Phase	Age Range	Dominant Mode	Relationship to Knowledge
Thinking / Individual judgment maturing	Late adolescence onward (~18+)	Capacity for systemic, ethical, and critical thinking fully available; individual moral agency emergent; the question "what do I owe the world?" becomes personally meaningful	Knowledge demands to be evaluated, questioned, and acted upon — passive reception is developmentally unsatisfying

How this maps to the 4A-Pathway and the toolkit's rings:

Developmental Phase	Primary 4A Entry	Rings Where This Phase Is Most Active
Will-forces	**Awareness** — the body knows before the mind explains	Ring 0 (calibration), Ring 1 (material contact), Ring 2 (soil and garden)
Feeling forces	**Acknowledgment** → **Attitude** — recognition and values reflection	Ring 2 (ecological patterns that *matter*), Ring 3 (contested social patterns)
Thinking / judgment	**Attitude** → **Action** — ethical synthesis and commitment	Ring 4 (bioregional deliberation), Closing (intention and return)

The developmental arc spirals across the lifespan. These phases are not permanent age-brackets. Every person re-enters the will-forces phase whenever they encounter something genuinely unfamiliar — a new landscape, a new craft, a new community. Every adult approaching Ring 0 for the first time is, in that moment, a will-forces learner: sensation must precede explanation. The toolkit's insistence on embodied observation before analytical interpretation is not a concession to young participants — it is an acknowledgment that Steiner's first phase describes the epistemological condition of any first encounter with the living world, regardless of the participant's age.

This means that the pedagogical design logic is consistent across all five of the toolkit's target groups:

- **Children and Youth (8–18):** The primary developmental task during the session is protecting the Awareness stage from premature explanation. Do not correct or interpret what children observe; receive it. Move toward Acknowledgment only when the sensory encounter has been genuinely inhabited.

- **Adults and Families:** Arrive often in the feeling phase — they come with values about the environment already present. The toolkit's role is to connect those values to specific, embodied, local experience (Acknowledgment) and to help them articulate an Attitude that is grounded rather than abstract.

- **Elders and Intergenerational Groups:** Elders typically bring decades of accumulated Acknowledgment and Attitude. The toolkit's role is to honor this as data — the elder memory transect is an Action-stage practice — and to create encounters (Ring 0 with soil from their childhood landscape; Ring 3 with streets they have watched change) that refresh Awareness within deeply known territory.

- **Artists and Researchers:** Often arrive at the thinking/judgment phase and risk skipping to abstraction. The toolkit's discipline of Awareness-before-analysis is its most important contribution to this group. Ring 0 is non-negotiable for researchers, precisely because it is most uncomfortable.

- **Cross-Border DE/PL Groups:** The cross-cultural proxemic encounter (two people from different languages kneeling in the same soil) operates simultaneously at all three developmental phases: will-forces (shared physical sensation), feeling (recognition across cultural difference), and thinking (bioregional deliberation that crosses the national boundary).

The Three-Stream Pedagogy: Head, Hands, Heart

Steiner's triune model of the human being — Thinking (*Denken*), Feeling (*Fühlen*), Willing (*Wollen*) — is the root of what the Erdpuls program calls Three-Stream Pedagogy: every workshop engages **Head** (conceptual understanding, pattern recognition, data interpretation), **Hands** (direct making, measuring, repairing, growing, building), and **Heart** (felt experience, values reflection, empathy, aesthetic attention) simultaneously.

The principle of *body first, then instrument* — which governs Ring 0, the soil protocol, and the sensor dialogue throughout — is the operational expression of this triune structure. The body (Hands/Willing) encounters the phenomenon first. The heart (Feeling) registers its significance. The head (Thinking) then works with something real, rather than with an abstraction that arrived before the experience it is supposed to illuminate.

This is simultaneously a Waldorf-derived pedagogical commitment and a Goethean scientific one. The connection between the two is not incidental: Steiner was one of the most rigorous late-19th-century interpreters of Goethe's scientific method, and the Erdpuls program's insistence on Goethean *zarte Empirie* (delicate empiricism) is continuous with, not separate from, its Three-Stream and 4A-Pathway structure.

Part 2: The Method in Detail

2.1 Ring 0 — The Body (Der Leib / Ciało)

Purpose: To calibrate participants as sensing instruments before directing attention outward. To establish that sustainability literacy begins with the capacity to *notice*.

Duration: 20–40 minutes

Core Practice:

Participants stand (or sit) at the center of the site in silence. They are asked to attend, sequentially, to each sensory channel:

- **Touch / Temperature:** What does the air feel like on exposed skin? Where is it warmer, cooler? Is there wind? From which direction? What is the ground texture underfoot?
- **Sound:** Close eyes. What is the nearest sound? The farthest? Which sounds are living, which mechanical, which elemental (wind, water)? What is the dominant soundscape?
- **Smell:** What do you smell? Can you distinguish organic from mineral from industrial scents? How does the smell change if you move two meters?
- **Sight (last, deliberately):** Open eyes. What is the first thing you see? Where does your eye rest naturally? What is the light quality — hard or soft, warm or cool? What colors dominate? What is moving?

Sensor Dialogue:

After the silent observation, introduce a single instrument reading — ideally one that corresponds to something participants just felt. For example:

- "You noticed the air felt cool and damp. The humidity sensor reads 78%. The temperature sensor says 11°C. Your skin said 'cool but not cold.' What does the difference between the number and your sensation tell you about how bodies and instruments perceive differently?"

This is not a trick to show that instruments are "more accurate." It is a genuine inquiry into two modes of knowing. Both are needed. Neither is sufficient alone.

Recording:

Participants make brief notes — not essays, but fragments: sensory impressions, single words, sketches. These are the raw material from which patterns will later be drawn.

Facilitator Notes:

This ring can feel strange to participants accustomed to informational workshops. It is important to frame it clearly: "We are calibrating our primary instrument — ourselves — before we begin observing the place." Resistance or discomfort is normal and should be named gently. The exercise works best outdoors and in genuine silence (no background music, no narration during the observation itself).

Proxemic Note for Ring 0:

Ring 0 operates entirely within the intimate and personal proxemic zones. Participants are attending to their own body (intimate distance with the self) and to the immediate ground, air, and sensory environment (personal distance with the site). All sensory channels are active: haptic (ground texture underfoot, air on skin), thermal (warmth, coolness, sheltered vs. exposed), olfactory (earth, vegetation, moisture, exhaust), auditory (near sounds, far sounds, the sonic horizon), and visual (deliberately last, to avoid its habitual dominance over the other senses).

The sequential sensory calibration in Ring 0 — touch/temperature first, then sound, then smell, then sight — follows a proxemic logic: it begins with the channels that operate only at intimate distance (touch, thermal) and moves toward the channel that extends to public distance (sight). This sequence progressively expands the proxemic field from the body outward, preparing participants for the movement through Rings 1–4 that will follow.

When introducing the sensor dialogue at the end of Ring 0, the facilitator is staging a proxemic encounter between the participant's body and the electronic sensor: "Your skin says 'cool but sheltered.' The thermometer says 11°C. These are two perceptions from different proxemic positions — your body at intimate distance, the sensor at its fixed point. Neither is more true. The gap between them is where learning begins."

4A-Pathway Note for Ring 0:

Ring 0 is a pure **Awareness** practice. Its function is to ensure that the first stage of the pathway — genuine sensory encounter — has been properly inhabited before any interpretation begins. Facilitators from an analytical background will be tempted to give context ("this is a glacially formed landscape, which explains the sandy soil you're feeling underfoot") during or immediately after the silent observation. This temptation should be resisted. The moment of explanation is the moment Awareness ends. Ring 0's entire pedagogical value depends on maintaining the Awareness stage intact until participants themselves begin asking "why" — which is the organic transition to Acknowledgment. With young children (will-forces phase), Awareness may fill the entire Ring 0 and extend into Ring 1. With adult researchers (thinking/judgment phase), the facilitator may need to gently enforce a longer Awareness period than participants initially find comfortable.

2.2 Ring 1 — The Site (Der Hof / Podwórze)

Purpose: To discover patterns in the immediate built and cultivated environment through structured observation and sensor data.

Duration: 1.5–3 hours (depending on site complexity)

Core Practice:

Participants move through the site — the campus, the yard, the building complex, whatever constitutes the immediate center. They are not given a tour. Instead, they walk with a set of **pattern-finding prompts**:

Spatial Prompts: - Where do people naturally gather? Where do they avoid? - Where does inside become outside? Is the transition abrupt or gradual? - Where does old material meet new material? What does the boundary look like? - Where does water go when it rains? Follow it. - Where is something broken, worn, or adapted by use? What does the wear reveal about how the place is actually used (versus how it was planned)?

Relational Prompts: - What materials recur? (Brick, wood, steel, earth, glass…) What story does each material tell about where it came from and how old it is? - Where do different activities overlap or share space? Where are they separated? - What is repaired here? What is abandoned? What is in between? - What would an animal (a bird, a cat, an insect) experience moving through this space?

Temporal Prompts: - What is the oldest visible layer? The newest? - How would this place look in a different season? - What has been added? What has been removed? How can you tell?

Sensor Integration:

If environmental sensors are available on site, assign small groups to specific sensor stations. Their task: compare the sensor data with their embodied observation of the same parameter. Where does the data confirm what you feel? Where does it surprise you? What question does the discrepancy raise?

Pattern Naming:

After walking, participants gather in small groups (3–5) and attempt to name the patterns they observed. The format is deliberately simple at this stage:

> *Pattern Name: [a short, evocative name in the participant's language] **Where:** [location on the site] **What We Noticed:** [description of the observation — sensory and/or instrumental] **The Tension:** [what competing forces or needs does this pattern seem to resolve?]*

Participants should be encouraged to name patterns in their own language first. Translation and discussion of naming differences is a valuable part of the process, especially in multilingual groups.

4A-Pathway Note for Ring 1:

Ring 1 deepens **Awareness** and begins the transition to **Acknowledgment**. The pattern-naming step — giving a short, evocative name to what has been observed — is the hinge between these two stages. Naming is not yet interpretation: it is the act of saying "this relationship is real enough to deserve a word." The moment a participant says "Backsteingedächtnis" (*Brick Memory*) or "Schwelle" (*Threshold*), they have acknowledged that the pattern they noticed matters — not just as a data point, but as a named feature of their shared environment. With groups in the will-forces or feeling phase, pattern naming should be light and playful at Ring 1 — the evocative word is more important than the correct analysis. With groups in the thinking/judgment phase, the tension field (what competing forces does this pattern resolve?) becomes the productive entry point.

Example Patterns (from the Erdpuls prototype):

These are illustrative, not prescriptive. Your site will produce different patterns.

Pattern Name	Tension	Observation
"Backsteingedächtnis" (Brick Memory)	Renovation vs. preservation	Three mortar eras visible in one wall; moisture sensors show the traditional mortar breathes, cement patches trap moisture
"Schwelle" (Threshold)	Indoor workshop vs. outdoor garden	The covered passage between buildings creates a zone that is neither fully inside nor outside — tools migrate here, conversations start here, rain or shine
"Reparaturpfad" (Repair Path)	Efficiency vs. encounter	Bringing broken objects to the repair workshop creates a walking route through the garden; the detour is where cross-pollination between activities happens

2.3 Ring 2 — The Garden and Near Landscape (Der Garten / Ogród)

Purpose: To extend pattern-finding into the ecological gradient between cultivated and wild, and to deepen the dialogue between observation and sensor data.

Duration: 2–4 hours (or a full day with seasonal depth)

Core Practice:

If the site includes a garden, field, forest edge, waterway, or other near-landscape, this ring shifts attention from the built to the growing environment. The prompts shift accordingly:

Ecological Prompts: - Where do different plant communities meet? What happens at the edge? - What is growing where nobody planted it? What does its presence tell you? - Where is the soil darkest? Lightest? Wettest? Driest? What grows in each? - What insects, birds, or other animals are active? Where specifically? At what time of day? - What is decomposing? What is emerging?

Soil and Water Prompts: - Take a handful of soil. What color, texture, smell? Does it hold together or crumble? Is it cool or warm? - Where does surface water collect? Where does it drain? Follow the gradient. - Are there visible signs of erosion? Of deposition? Of waterlogging?

The "Questions to the Soil" (adapted from the Erdpuls 13 Questions):

This is an example of a structured phenomenological protocol that other initiatives can adapt. The original asks participants to approach a patch of soil with 13 sequential questions, moving from sensation to relationship to history. Initiatives should develop their own question sequences appropriate to their primary medium (water, forest, coastline, urban fabric, etc.).

Citizen Science Deepening:

At this ring, the citizen science practice moves from comparison ("does the sensor match my feeling?") to genuine data collection:

- Species identification and counting (using apps such as iNaturalist, Pl@ntNet, or Merlin for birdsong)
- Soil sampling protocols (pH, moisture, temperature at multiple depths)
- Microclimate mapping using portable or fixed sensors
- Photographic documentation of indicator species, erosion patterns, succession stages

The data generated becomes part of the pattern record and, if contributed to open platforms, extends the value beyond the workshop itself.

Pattern Naming:

The same format as Ring 1, but now ecological patterns emerge alongside spatial ones. Participants often find that patterns from Ring 1 (the built environment) are connected to patterns in Ring 2 (the garden/landscape) — e.g., the orientation of a wall creates a microclimate that supports particular plant communities. These connections are themselves patterns, and should be named.

4A-Pathway Note for Ring 2:

Ring 2 is where **Acknowledgment** typically consolidates. The soil in the hand — warm or cold, alive or compacted, rich with organisms or stripped bare — is difficult to remain indifferent to. The act of counting organisms in a timed two-minute observation, of noticing that this patch has thirty earthworms and the adjacent one has two, produces the felt recognition that *this matters* without requiring any explanatory framework to arrive first. The citizen science practice at this ring is particularly significant

developmentally: contributing species observations to iNaturalist, uploading soil temperature data to openSenseMap, means that the Acknowledgment becomes public and durable — the participant's perception enters a global record. This is the beginning of the movement toward Action, even before Attitude has been fully articulated. For groups in the will-forces phase, Ring 2 is often the peak of the day: hands in soil, creatures counted, the living world undeniably present. For groups in the feeling phase, this is where the question "why is it different here?" first becomes urgent.

2.4 Ring 3 — The Settlement (Die Siedlung / Osiedle)

Purpose: To extend pattern-finding to the human settlement — the town, village, or neighborhood — where social, economic, and cultural patterns overlay ecological ones.

Duration: Half day to full day

Core Practice:

Participants leave the site and walk through the surrounding settlement. This ring requires more preparation than the others, because the settlement includes other people's spaces, histories, and sensitivities. Facilitation should address respectful observation, the ethics of photographing inhabited spaces, and the difference between observation and judgment.

Settlement Prompts: - Where do paths converge? Where does the settlement feel most alive? - Where does the built fabric thin out into fields, forest, or water? Is the edge sharp or graduated? - What is the oldest visible layer of the settlement? What is the newest? Do they coexist or conflict? - Where does the settlement turn toward its landscape (river, valley, mountain, forest) and where does it turn away? - What sounds define the settlement? Traffic, church bells, birdsong, machinery, silence? - What names are on the streets, the buildings, the memorial stones? What history do they encode? What history do they omit?

Local Knowledge Integration:

This ring benefits enormously from the participation of long-term residents — particularly older community members. Their memory constitutes a temporal dataset that no sensor can replicate: "There used to be a stream here." "This was all orchards before the war." "The market was held in this square until 1990."

These oral testimonies are not merely anecdotal; they are longitudinal ecological and social data. If residents are willing, their contributions should be recorded (with consent) and integrated into the pattern record.

Historical and Cartographic Cross-Reference:

Where available, historical maps, aerial photographs, land-use records, and census data can be layered over present observation. The question is always: what patterns have persisted? What has been lost? What is emerging?

Controversy as Pedagogical Method:

At this ring, participants encounter patterns that are genuinely contested: a settlement boundary that some read as "edge" and others as "exclusion"; a derelict building that some call "heritage" and others call "blight"; a land-use change that some celebrate as progress and others mourn as loss. These disagreements are not problems to be resolved through facilitation skill — they are the subject matter.

The toolkit treats controversy as a core feature of sustainability education, not a complication to be managed (BNE 2.2.1). The facilitator's role at contested moments is not to broker consensus but to ensure that disagreement is articulated clearly, that all readings are heard with equal respect, and that the contested status of a pattern is recorded as part of its documentation. A pattern that one group reads as "community resilience" and another reads as "resistance to change" is more accurately documented as *contested*, with both readings preserved. The tension between readings is often more informative than either reading alone.

Pattern Naming:

At this ring, patterns become more complex and often more contested. This is not a problem — it is the beginning of genuine dialogue about values, sustainability, and whose patterns count. The facilitator should create space for disagreement without forcing resolution.

4A-Pathway Note for Ring 3:

Ring 3 is the primary **Attitude** ring. The settlement is where values are written into stone, street-naming, building choices, and land use — and where those values come into conflict. The facilitator's task is to help participants recognize that the contested patterns they encounter are not accidents or failures: they are the place's live tensions, the unresolved arguments between different visions of what the settlement should be. Articulating an Attitude toward these tensions — "I think the derelict granary should be preserved," "I think this settlement has turned its back on its river" — is not opinion-sharing for its own sake. It is the developmental move from perceiving the world (Awareness, Acknowledgment) to taking a position within it, which is the prerequisite for meaningful Action. Groups in the thinking/judgment phase will enter Attitude at Ring 3 most naturally; facilitators working with younger or first-time participants should be patient — Attitude may not emerge at Ring 3 at all, and that is appropriate. It will emerge later, or on a return visit.

2.5 Ring 4 — The Sub-Bioregion (Die Teil-Bioregion / Subbioregion)

Purpose: To collectively define the bioregional context — the ecological, hydrological, geological, and cultural unit within which the site and settlement exist — and to discover the patterns that operate at this scale.

Duration: Full day, or an extended process across multiple sessions

Core Concept: What Is a Bioregion?

Bioregional thinking (Peter Berg, Raymond Dasmann, Kirkpatrick Sale) proposes that the meaningful unit for ecological and cultural life is not the administrative district but the *bioregion*: a territory defined by natural boundaries — watersheds, soil types, vegetation communities, climatic zones — and by the lived practices of its inhabitants.

Most people have never been asked: "Where does your place begin and end?" Administrative boundaries (the Landkreis, the county, the postal code) are familiar but ecologically arbitrary. Bioregional boundaries are real but unfamiliar. Discovering them is itself a profound sustainability literacy exercise, because it forces participants to think about interconnection, flow, and scale.

The Sub-Bioregion as Working Scale:

A full bioregion (e.g., "the North European Plain" or "the Baltic drainage basin") is too large for a workshop to discover through direct observation. The *sub-bioregion* is the appropriate working scale: the smallest coherent ecological-cultural unit that participants can walk, observe, and know. It might correspond roughly to a single watershed, a particular soil-and-vegetation association, or the area within which a community shares economic and social life.

Discovery Process:

This ring is more analytical than the previous ones, because it requires synthesis across multiple data sources. But it still begins with observation:

1. **Walking the Edges:** If feasible, participants walk toward the perceived boundary of "their" place in different directions. Where does the landscape character change? Where do the soils shift? Where does the water divide? Where do you begin to feel "this is somewhere else"?

2. **Watershed Mapping:** Water is the most reliable bioregional boundary-maker. Where does rainfall at your site eventually flow? What river system carries it? Where does your drinking water come from? Tracing the water upstream and downstream reveals the real geography of connection and dependency.

3. **Geological and Soil Reading:** The substrate beneath the landscape determines much about what grows, how water moves, what can be built, and what the place looks like. Even basic geological maps, combined with on-the-ground soil observation from Ring 2, begin to define bioregional character.

4. **Vegetation and Species Assemblages:** What plant and animal communities characterize this area? Where do they give way to different communities? Citizen science platforms (iNaturalist, observation.org) provide existing datasets that can be overlaid with workshop observations.

5. **Cultural and Economic Flows:** Where do people in this settlement go to work, to shop, to celebrate? Where do their children go to school? What shared stories, festivals, or practices define the cultural catchment? Where does the cultural landscape cross an administrative boundary? Where does an administrative boundary cut through a cultural unity?

6. **Historical Layering:** What did this sub-bioregion look like 50, 100, 500 years ago? What forces (glaciation, settlement, war, industrialization, rewilding) have shaped its current form? Place-names are often the deepest geological and ecological records: the Slavic, Germanic, Celtic, or other roots in local toponymy frequently encode landscape features that have since been obscured.

Collective Boundary-Drawing:

The culminating exercise of this ring is a collective map-making session. Using large-format base maps (topographic, satellite, or hand-drawn), participants propose and debate the boundaries of their sub-bioregion based on everything observed and collected. There is no single correct answer. The debate itself is the learning.

The resulting map should include: - Proposed bioregional boundary with rationale - Key ecological features (water bodies, forest types, soil zones) - Key cultural features (settlement patterns, heritage sites, gathering places) - The patterns discovered at each ring, placed spatially - Sensor locations and data summaries - Open questions for further investigation

Global-Local Connection:

Ring 4 is where the local and the global become unmistakably linked. A watershed boundary is simultaneously a local feature and a component of a continental river system. A soil-type boundary reflects glacial history at a planetary scale. A cultural landscape shaped by migration, war, and industrialization connects to geopolitical forces that still operate globally. Facilitators should name these connections explicitly: "The sand beneath our feet was deposited here by the Vistula glacier 15,000 years ago. Climate change today will affect how much water this glacier's legacy holds in summer." The pattern language of a place is local in form and global in context (BNE 2.2.2).

4A-Pathway Note for Ring 4:

Ring 4 is where **Attitude** becomes fully articulate and **Action** first becomes conceivable. The boundary-deliberation exercise — drawing the sub-bioregion on a collective map and arguing for your proposed boundary with observed evidence — is the most demanding cognitive-ethical task in the toolkit. It requires participants to synthesize days of sensory observation into a position, defend it, listen to alternatives, and arrive at a shared (if provisional) conclusion. This is a thinking/judgment-phase activity in its fullest form, and facilitators should not be surprised if participants in the will-forces or early

feeling phase find it abstract or tiring. For those groups, the Ring 4 session can be abbreviated to a single question — "If you had to draw a line around 'your place' on this map, where would it go?" — followed by the global-local connection discussion, with the full deliberation reserved for return visits. For researchers, artists, and older participants, the boundary debate often produces the most intellectually alive moment of the entire program: the place suddenly has stakes.

2.6 Closing and Full-Cycle Reflection

Purpose: To bring the workshop cycle to intentional completion; to consolidate learning across all rings; to create a bridge between the embodied experience of the workshop and participants' everyday lives and decisions.

Duration: 45–90 minutes (not to be abbreviated — this phase is as important as Ring 0)

Why a formal closing matters:

Sustainability education fails when it ends at the bioregional map. The pattern language that has been discovered, the tensions named, the data collected — all of this remains as intellectual content unless it is connected, through reflection, to the participant's own values, motivations, and intentions. The closing phase is where the workshop's ecological and spatial content becomes personal — where the *knowing* begins its movement toward *being* and *doing*.

Three-Phase Closing Protocol:

Phase 1 — Harvest (20–30 minutes)

Participants work individually or in pairs with the following prompts:

Look back across the rings: - What was the moment of greatest surprise? Greatest recognition? - What pattern did you discover that you will not be able to "un-see"? - Where did your own assumptions show up as a constraint on observation?

Look at the pattern language as a whole: - What tensions appear at multiple rings? What does their recurrence tell you about this place? - What is missing — what would you need to observe to feel the picture was complete? - If you had to name the deepest pattern of this place in a single sentence, what would it be?

Phase 2 — Values Connection (15–20 minutes)

Participants are asked to make explicit the link between what they observed and what they care about. This is not a political exercise; it is an act of self-knowledge.

- "The pattern I found most significant is **__. It matters to me because ____.**"
- "One thing I observed that contradicts something I thought I knew is _____."

- "One thing I observed that I now want to act on — in my daily life, in my work, in my community — is _____."

These responses are shared in a circle, without commentary or debate. Each response is received with the same brief acknowledgment: "Thank you." The facilitator records themes (not attributions) for later quality review.

Phase 3 — Commitment and Return (10–15 minutes)

Each participant names one concrete, achievable intention for the next 30 days — one way they will carry what they observed back into their ordinary context. This is not a pledge ceremony; it is a practice of translation. Intentions are written on small cards that participants keep.

The facilitator closes with a reciprocal invitation: "You have described this place. Return next season and describe it again. What you notice will have changed — because the place will have changed, and because you will have changed. The pattern language is never finished."

4A-Pathway Note for the Closing:

The three-phase closing protocol is a structured embodiment of the full **Action** stage. The Harvest phase (Phase 1) completes the cycle from Awareness through Acknowledgment: "what did I notice? what surprised me? what can I no longer un-see?" The Values Connection phase (Phase 2) completes the Attitude stage in its most personal form: naming what was observed, why it matters, and what it asks of the observer. The Commitment and Return phase (Phase 3) initiates Action in its smallest and most honest form: one concrete, achievable intention for the next 30 days.

The closing should not be compressed or omitted even when time is short. From a developmental standpoint, a workshop that ends at the bioregional map — with Attitude perhaps articulated but Action not yet initiated — leaves participants at the most unstable point in the pathway. They have been moved; they have not yet moved themselves. The 30-day intention card is not a formality; it is the developmental bridge between felt significance and lived change. For groups in the thinking/judgment phase, the commitment should be genuinely challenging — something that requires effort and carries real consequences in their ordinary context. For groups in the will-forces or feeling phase, the intention should be small, sensory, and achievable: "I will bring a handful of soil from my garden next time and compare it with the soil here." The gap between these two is not a difference in seriousness — it is a difference in developmental readiness, and both are equally valid starting points for the spiral.

Participant Feedback:

At the close of each workshop, participants are asked to complete a brief written response (anonymous, 3–5 minutes) addressing three questions:

1. What was most useful about today's method?
2. What was most difficult or unclear?

3. What one change would improve the experience for future participants?

These responses are the primary quality improvement instrument for the program. They feed directly into session planning for the following season (BNE 5.2.1, 5.2.2). Facilitators are asked to read responses within 48 hours and note recurring themes in the session log. Initiatives running the program over multiple seasons should track response patterns year-over-year.

Facilitator Self-Reflection:

Following each session, the facilitator completes a brief written self-reflection (10–15 minutes): - Where did the group's energy peak? Dip? - Which ring produced the richest pattern-finding? Why, do you think? - What proxemic condition supported or inhibited learning? - What would you do differently?

These notes are kept in a facilitation log that becomes the basis for annual program review.

Part 3: The Pattern Record

3.1 Pattern Card Format

Each pattern discovered through the process should be documented in a consistent format. The following template is offered as a starting point; initiatives should adapt it to their needs.

PATTERN CARD

Name: [In the language of the discoverer, with translations]

Ring: [0–4, or the initiative's own ring designation]

Location: [Specific place, with coordinates if available]

Discoverers: [Names or group identifier]

Date & Season: [Important — patterns may be seasonal]

The Tension: [What competing forces, needs, or tendencies does this pattern address? Every genuine pattern resolves a tension — between shelter and openness, between cultivation and wildness, between old and new, between individual and collective. If no tension can be articulated, the observation may not yet be a pattern.]

What We Observed: [Sensory description — what was seen, heard, felt, smelled. Be specific. "The morning sun hits the east wall of the barn and warms the soil strip below it. By 10:00, this strip is 4°C warmer than the soil three meters away. Bees arrive here first."]

Instrumental Data: [Sensor readings, species counts, soil samples, historical records, map evidence. Include dates, instruments used, and precision/uncertainty where known.]

The Pattern (Proposed Resolution): [How do the observed elements relate to each other in a way that sustains life, community, or ecological function? This is the heart of the pattern — the *relationship* that works.]

Connections to Other Patterns: [Which patterns at the same or different rings does this one depend on or support? Patterns do not exist in isolation.]

Questions for Further Investigation: [What don't we know yet? What would we need to observe across a different season, a longer time period, or with different instruments?]

Status: [ ] First observation / [ ] Confirmed across multiple observations / [ ] Contested

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3.2 From Cards to Language

Individual pattern cards are observations. A pattern *language* is a structure — a web of relationships among patterns that, taken together, describe how a place works.

After generating pattern cards across all rings, the group faces the synthesizing question: **How do these patterns connect?**

Some practical methods for this synthesis:

Wall Mapping: Print or pin all pattern cards on a large wall, arranged spatially (by ring) or thematically. Use string, tape, or drawn lines to connect related patterns. Clusters and gaps become visible.

Dependency Chains: Ask: "Which patterns could not exist without which other patterns?" For example: the microclimate pattern (Ring 2) depends on the wall orientation pattern (Ring 1), which depends on the geological substrate pattern (Ring 4) that determined the building materials available. These chains reveal the deep structure of the place.

Cross-Scale Resonances: Often a pattern at one ring echoes or mirrors a pattern at another ring. A settlement pattern (Ring 3) may repeat the geometry of the watershed pattern (Ring 4). A body-sensation (Ring 0) may correspond to a measurable gradient (Ring 2). These resonances are not coincidences — they are how places cohere.

Narrative Synthesis: Finally, the pattern language should be expressible as a story — not a database. "This is a place where [the glacial moraine created sandy soils], which means [the water drains quickly and the forest is dominated by pine], which means [the settlements developed along the lake chain where water was accessible], which means [the building tradition uses brick from local clay rather than stone], which means [the repair culture here is a culture of brickwork, mortar, and slow accumulation]…" This narrative is the pattern language in its most communicable form.

Part 4: Adaptation Guide

4.1 Minimum Requirements

To use this toolkit, an initiative needs:

- **A place.** Not an abstraction, not a concept — a physical location that participants can walk, touch, and observe.

- **A facilitator** comfortable with open-ended, observation-based processes (not lecture-based instruction).

- **Participants** (6–25 is ideal) willing to slow down and attend.

- **Basic recording materials:** Notebooks, pencils, cameras/smartphones.

- **Time:** Minimum half day for a simplified version (Rings 0–1); full version requires 3–5 days.

- **A closing protocol.** Section 2.6 should not be omitted even in shortened versions. A 20-minute abbreviated closing (Harvest only) is sufficient for half-day formats; the full three-phase closing is recommended for multi-day programs.

On participant feedback: Even the simplest implementation should include an opportunity for participants to share what worked and what did not. Three written questions on a slip of paper at the close of the session — "What was most useful? What was most difficult? What one change would improve this?" — takes five minutes and produces actionable quality improvement data. This is the minimum practice for responsible facilitation (BNE 5.2.2).

4.2 Scalable Additions

The following enrich the process but are not prerequisites:

Resource	How It Enriches
Environmental sensors (IoT, senseBox, Arduino)	Deepens the observation-data dialogue at every ring
Citizen science platform accounts (iNaturalist, etc.)	Connects local observations to larger datasets
Historical maps and archival materials	Adds temporal depth, especially at Rings 3–4
Elder / long-term resident participation	Provides living longitudinal data
Multilingual participant group	Reveals cultural differences in perceiving and naming
GIS / mapping tools	Supports Ring 4 synthesis

Resource	How It Enriches
Open Data APIs (weather, soil, land use)	Contextualizes local sensor data

4.3 Contexts for Adaptation

The concentric ring method has been designed with the following contexts in mind, though it is not limited to them:

Rural sustainability centers and nature education sites — The original context. The gradient from built environment through garden to open landscape is physically present and walkable.

Urban makerspaces and community gardens — The rings compress: Ring 1 might be the building, Ring 2 the garden or courtyard, Ring 3 the neighborhood, Ring 4 the urban watershed or metropolitan ecology. Urban pattern languages will foreground different tensions (density, noise, heat islands, social diversity) but the method is the same.

Schools and universities — The toolkit can structure multi-day field courses or semester-long projects. Ring 0 works well as a standalone exercise for introducing phenomenological observation. The full sequence aligns with project-based and inquiry-based learning frameworks.

Cross-border and intercultural initiatives — Where the administrative boundary cuts through a bioregional or cultural continuity, the Ring 4 exercise becomes particularly powerful. The sub-bioregion may straddle national borders, and the act of mapping it challenges participants to think beyond political divisions.

Indigenous and traditional knowledge contexts — The method's emphasis on observation before theory, on multilingual naming, and on elder knowledge creates space for traditional ecological knowledge alongside scientific instrumentation. However, facilitators must be attentive to the ethics of knowledge extraction and ensure that indigenous and traditional knowledge holders retain control over their contributions.

4.4 What This Toolkit Does Not Do

To maintain honesty about scope:

- It does not produce a **complete biodiversity survey** or environmental impact assessment. It produces a pattern language — a different kind of knowledge, complementary to but not replacing scientific inventory.
- It does not claim **universality**. The patterns discovered are specific to a place, a time, a group of observers. They are hypotheses, not laws.
- It does not resolve **political or economic conflicts** around land use, though the shared observation process often creates conditions for more productive dialogue.

- It does not require or assume **high technology**. The simplest version needs only human senses and a notebook. Technology enriches but should never replace direct perception.

Part 5: Theoretical Roots and Further Reading

This toolkit stands at the intersection of several intellectual traditions. None is treated as dogma; each contributes a particular quality of attention. Together, they form a layered spatial theory — from the body's intimacy with the ground to the community's relationship with its bioregion — that grounds sustainability education in embodied, place-based, culturally aware practice.

Christopher Alexander — *A Pattern Language* (1977) and *The Nature of Order* (2002–2005). The concept of patterns as recurring resolutions of tensions; the idea that environments possess a quality of "life" or "wholeness" that can be perceived and cultivated. Alexander provides the grammar of environmental pattern at every scale, from a window's relationship to its wall to a town's relationship to its watershed. His concentric, scale-linking structure — where patterns at one scale create the context for patterns at the next — directly inspires the toolkit's ring structure.

Proxemics (Edward T. Hall) — *The Hidden Dimension* (1966) and *The Silent Language* (1959). The study of human use of space as a culturally elaborated communication system. Hall's four distance zones (intimate, personal, social, public) and their associated sensory profiles (haptic, thermal, olfactory, visual, vocal) provide the grammar of interpersonal and sensory space that complements Alexander's environmental grammar. Where Alexander shows *what* to observe at each scale, Hall shows *how* we observe — which senses are available, which fade, and how cultural patterns shape spatial behavior. The toolkit draws on Hall's work in three specific ways: (1) the concentric rings are understood as sensory regimes, not merely spatial scales; (2) cross-cultural encounters (especially in the DE/PL cross-border context) are recognized as proxemic events shaped by culturally different spatial norms; and (3) facilitation design — seating arrangements, vertical relationships, sociopetal vs. sociofugal space — is treated as pedagogically significant spatial choreography. See also: Robert Sommer (*Personal Space*, 1969) on sociofugal/sociopetal space; Larry Busbea (*Proxemics and the Architecture of Social Interaction*, 2020) on the architectural implications.

Goethean Science — Johann Wolfgang von Goethe's approach to natural observation, developed in *The Metamorphosis of Plants* (1790) and *Theory of Colours* (1810). The discipline of attentive, sequential observation before analysis. The idea that the observer is part of the phenomenon. Elaborated in the 20th century by Henri Bortoft (*The Wholeness of Nature*, 1996). The toolkit's insistence on sensation before interpretation, and its Ring 0 body-calibration practice, are direct applications of Goethe's *zarte Empirie* (delicate empiricism). In proxemic terms, Goethean observation requires that the observer remain in the intimate or personal zone with the phenomenon — close enough for all sensory channels to be active — long enough for the phenomenon to reveal its own structure.

Anthroposophy / Rudolf Steiner — *Die Erziehung des Kindes vom Gesichtspunkte der Geisteswissenschaft* (The Education of the Child, 1907); *Allgemeine Menschenkunde als Grundlage der Pädagogik* (Study of Man, 1919); and the lectures collected as *Erziehungskunst* (The Art of Education, 1919). Steiner was simultaneously the most rigorous early interpreter of Goethe's scientific method in the German-speaking world and the founder of Waldorf education — two contributions that are not incidental to each other. His developmental stage framework — will-forces dominant in early childhood, feeling/rhythmic forces in middle childhood, thinking/individual judgment emerging in adolescence — provides the calibration logic for the toolkit's 4A-Pathway (Awareness → Acknowledgment → Attitude → Action). His triune model of the human being (Thinking / Feeling / Willing, or *Denken / Fühlen / Wollen*) is the philosophical root of Three-Stream Pedagogy (Head / Hands / Heart), which governs the design of every session in this toolkit. The toolkit draws on Steiner's pedagogical insights — particularly his insistence that embodied, sensory encounter must precede conceptual instruction, and that moral capacity develops through concrete experience of consequence rather than abstract ethical instruction — as a developmental psychology applicable to all ages and backgrounds. Facilitators are not required to hold any position on the broader anthroposophical worldview; the pedagogical framework stands independently on the basis of its practical efficacy. See also: Kieran Egan (*Teaching as Storytelling*, 1986) for a non-anthroposophical account of the same developmental stages; David Hay and Rebecca Nye (*The Spirit of the Child*, 1998) for empirical research on children's relational awareness that independently corroborates Steiner's will-forces phase.

Phenomenology — Edmund Husserl, Maurice Merleau-Ponty (*Phenomenology of Perception*, 1945), and more recently David Seamon (environmental phenomenology, "place-ballet"). The insistence that knowledge begins with pre-theoretical description of lived experience. Merleau-Ponty's radical claim — that the body is not an object in the world but the subject through which there is a world — grounds the toolkit's treatment of the body as a sensing instrument of equal dignity to electronic sensors. Hall's proxemics operationalizes Merleau-Ponty's insight: the body's sensory reach defines the boundaries of lived space, and these boundaries are culturally elaborated.

Bioregionalism — Peter Berg and Raymond Dasmann (the original bioregion concept, 1970s); Kirkpatrick Sale (*Dwellers in the Land*, 1985); Robert Thayer (*LifePlace*, 2003). The proposition that ecological and cultural regions — not administrative units — are the meaningful scale for sustainable inhabitation. In proxemic terms, the bioregion represents the public zone of place-relationship: the scale at which only vision operates, where the territory can be seen but not touched, where belonging is cognitive rather than sensory. The challenge of bioregional education is to create felt connection at a scale that exceeds the body's sensory reach — a challenge the toolkit addresses through walking transects (bringing the body into proxemic contact with distant landscapes) and through the elder memory transect (where intimate sensory memories extend the proxemic field across decades).

Sense of Place / Genius Loci — Christian Norberg-Schulz (*Genius Loci: Towards a Phenomenology of Architecture*, 1979); Edward Relph (*Place and Placelessness*, 1976); Yi-Fu Tuan (*Space and Place*, 1977). The theoretical grounding of place as a fundamental dimension of human existence, not a mere

backdrop. Tuan's distinction between "space" (abstract, geometric, indifferent) and "place" (experienced, valued, known) maps onto the proxemic gradient: space becomes place when it moves from the public zone into the personal and intimate — when it is not merely seen but touched, smelled, inhabited. The pattern-discovery process is, in this reading, a systematic practice of converting space into place by progressively engaging all proxemic sensory channels.

Citizen Science — Alan Irwin (*Citizen Science*, 1995); the contemporary platform ecology (iNaturalist, Zooniverse, senseBox/openSenseMap). The democratization of environmental monitoring and the epistemological implications of lay participation in knowledge production. The "sensor dialogue" central to this toolkit — placing human embodied perception alongside instrumental data — is a proxemic practice: the human senses a phenomenon at intimate distance while the sensor measures it from a fixed point. The conversation between these two forms of perception is a conversation between two proxemic positions.

Ubuntu Philosophy — The Southern African ethical principle of "I am because we are" (*umuntu ngumuntu ngabantu*). The recognition that selfhood is constituted through relationship — extended in this toolkit to the relationship between humans and their ecological context. Ubuntu and proxemics share a fundamental insight: the self is not bounded at the skin. Hall demonstrated that the space surrounding a person is psychologically part of them — an extension of their being. Ubuntu extends this further: the community, the landscape, the soil are extensions of the self. The reciprocal token economy (Appendix B) is a structural expression of this principle.

Education for Sustainable Development (BNE) — The UNESCO framework and its national implementations (in Germany: Transfer 21, the BNE quality catalogs). The toolkit is designed in full alignment with the Brandenburg *Qualitätskatalog für BNE außerschulischer Anbieterinnen und Anbieter* (MLUK, April 2023), which structures quality across seven areas and 69 criteria. All minimum requirements are met; full criterion-by-criterion evidence is documented in Appendix D.

The twelve *Gestaltungskompetenzen* (Transfer 21 framework) are all addressed. In brief: the toolkit's observation-based approach develops *anticipatory thinking* (4.1.2) through bioregional scenario reasoning; the sensor-dialogue practice develops *systems thinking* (4.1.3) through multi-scale pattern recognition; the multilingual naming practice develops *openness to new perspectives* (4.1.1) through cross-cultural comparative observation; the collective boundary-drawing debate develops *participatory competence* (4.2.1); the controversy-as-method approach at Ring 3 develops *independent judgment* (4.2.2) and *capacity to handle uncertainty* (4.1.4); the closing reflection develops *self-motivation and individual ethics* (4.3.1, 4.3.4); and the cross-border, intergenerational, and cross-cultural composition of participant groups develops *empathy* (4.3.3) and *solidarity* (4.2.4). Proxemic awareness — the capacity to read spatial arrangements, understand cultural differences in spatial behavior, and design sociopetal environments for collaborative learning — underlies many of the above competencies and is treated throughout this toolkit as a foundational facilitation literacy.

The UN SDGs addressed by this toolkit are set out in Section 1.6 above, and evidenced in detail in the OER Metadata Package (document 00, Section 1.4). The primary SDGs are 4 (Quality Education), 13 (Climate Action), and 15 (Life on Land). Secondary connections include SDGs 3, 6, 10, 11, and 17.

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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.