

WELCOME TO THE



Nature Exchange

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*“You are the sum of all your discoveries.
They shape you, change you, enable
you to grow and see your world anew.”
—Herman, Passineau, et al.,
Teaching Kids to Love the Earth, 1991*



The Thinking Behind *Nature Exchange*™

***Nature Exchange*™ cultivates enthusiasm for nature**

Nature Exchange™ is a unique concept founded on the belief that we learn best from our day-to-day activities. Exploring the world outside our doors, picking up and handling real things, and engaging in conversation with meaningful people in our lives – these are fundamental in forming the framework for much of our understanding and respect for the natural world.

What is *Nature Exchange*™?

Nature Exchange™ is a learning environment that encourages people to get out into nature and actively observe, collect, study and share the world around them.

***Nature Exchange*™ inspires self-motivated learning**

Nature Exchange™ is an educational experience designed to encourage us to appreciate the natural world by challenging people to learn about the biological and physical components of our environment. By harnessing our innate powers of observation, driving curiosity and fascination with collecting and trading with one another, *Nature Exchange*™ inspires excitement for self-motivated learning.

The Goal

Harness the power of children’s innate curiosity and individual learning styles to build enduring relationships with the natural world.

***Nature Exchange*™ teaches the value of knowledge**

Nature Exchange™ is a forum where visitors can trade natural objects and swap stories with trained staff — without using money. The process teaches the ethics of responsible collecting and observing, helping traders understand that the inherent value lies not with the item itself, but with the experience of gaining and sharing knowledge about the world around us.

The Objectives

- Build a sense of wonder through focused activities
- Instill a love of learning through active mentoring
- Foster pride-in-accomplishment through age-appropriate challenges
- Create a feeling of community through knowledge sharing and discussion



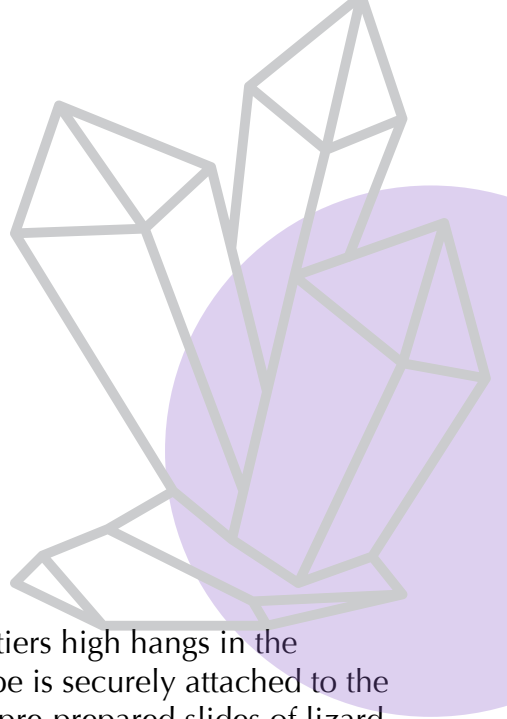
The Story of Will's Zoo Days

Will Lovelace is seven and a half. The half might be the most important part. The half has been so full of life, so full of challenge, so full of wonderment, so full of discovery.

This child of mine at age three could fully describe the life cycle of a bee and its importance in pollenization and the production of honey. Oh, his depiction didn't muddy the waters with grandiose terms and phrases; however, his story was just as technically correct as if it came from the pages of the *Journal of Science*.

The local zoo houses a most wondrous facility — an awe-inspiring place where nature children go to trade their found treasures — treasures such as the cap of an acorn, a brightly colored stone, the shed skin of a snake or lizard found on a hike through the woods. This child of mine dashes past the gorilla exhibit, foregoes the tigers, and sideswipes the snakes, the lions, the giraffes — he beelines directly to the *Nature Exchange*™.

We maintain a membership to the zoo solely for the purpose of utilizing the *Nature Exchange*™. It houses all sorts of fascinating items, categorized by type and size. The seashells are in bins on the left wall, fossils and rocks to the right, snakeskins are draped from the ceiling, and an incredible wasp



nest three enormous tiers high hangs in the window. A microscope is securely attached to the counter with various pre-prepared slides of lizard skin, fish scales and dragonfly wings standing ready for discovery. The *Nature Exchange*™ maintains a log of all visitors. Points are distributed for all finds, stories, and nature journals. The points can then be used as currency to purchase the treasures housed here. We never leave the zoo without some form of trade having taken place.

We enter my child's nirvana, immediately take our seats at the desk and await our turn. Will can't contain his enthusiasm, his stories start before the docent can even take his seat.

***“Take heart in
the love of nature and
in the imagination stirred by it
in the mind of a child.”***

This day, this wonderful day of sunshine and time together at the end of the hot Texas summer, we sit inside the *Nature Exchange*™ for well over an hour poring over our treasures. Will shows the zookeeper his first prize — a clutch of turtle eggshells. He tells the story of how he found the turtle in the yard at Ms. Ann's house. He watched



The Story of Will's Zoo Days cont . . .

the turtle, a red-eared slider, in its egg-laying trance, unaffected by his presence. He watched on as the turtle covered up its nest and made its way back to the water. His story ends with a recount of his finding the remains of the eggs the next morning. The family of raccoons who had found refuge in our attic, apparently had dined on egg delight and left nothing but the leathery shells as evidence of their presence. One hundred points — thank you very much.

His next story is merely a re-telling of the adventure of finding two snakes entwined. One identified as a water moccasin, the other identified as a king snake. I know what will happen, but encourage Will to watch on. I tell Will that they are in a battle to the death. He quickly picks sides — the water moccasin, knowing of its poison. I naturally have to take the side of the king snake — my unannounced preference. We watch on as the battle ensues. With every twist, the king snake's hold tightens. Soon, very soon, the fight is over. My contender, completely immune to the water moccasin's poison, uncoils himself from his prey and begins to swallow him whole. The site was not gruesome or nightmarish, more just the way things are. Twenty-five points — not exactly what we wanted, but points nonetheless.

The final treasure is presented with much pomp and circumstance. It is a bug, a most glorious bug. It is beautiful — a metallic green with a copper head and one enormous horn on the top of its head. The stir begins. First, one zookeeper, then another, then a volunteer. They examine Will's find. They look through their stores and don't find another like it. They check their reference books and identify the insect as a Rainbow Scarab. They quickly make preparations — a place of honor, under glass. The prize is skewered on a pin, labeled and prominently displayed. SCORE! 1000 points for having produced such a prize. The doling out of so many points for his find only wetted Will's appetite for more adventure. We're off to scrounge up some more.... My child — scientist, adventurer, outdoorsman, junior biologist — glorious child. Take heart in the love of nature and in the imagination stirred by it in the mind of a child.

— *Kelli Davie Lovelace*



The Nature Exchange™ Package



User-friendly and cost-efficient, the *Nature Exchange*™ turnkey package provides all the equipment and training you need to set up a complete visitor experience, designed to attract repeat visitors.

A development workshop

- This is a preliminary visit to your facility to plan the physical site and identify your content needs

A unique web site and database

- Your very own *Nature Exchange*™ web site — set up and monthly updates
- Installation of the *Nature Exchange*™ database and computer trading station
- Password-protected access to the operator's web site

A customized exhibit design and collection¹

- Custom floor plan, including a complete architectural and interior fitting
- All the necessary supplies
- Start up inventory of natural items
- Start up library collection

You need to provide

- Committed staff or volunteers to operate the program
- A space prepared according to *Nature Exchange*™ specifications²

Training and program support

- Training visit at Science North — one week
- Installation and staff training session at your facility — one week
- Training and operations manual
- Ongoing training, including workshops, programming and support

¹ View a detailed list of *Nature Exchange*™ supplies on the Technical Specifications page.

² For a complete list of client specifications, view the Client Requirements section on the Technical Specifications page.



Technical Specifications

The turnkey package provides everything you need to open a *Nature Exchange*[™] at your facility.

Furnishings

- Customized cabinetry
- Storage area shelving

Graphic Program

- Customized graphic panels

Equipment

- Trim saw
- Polishing machine
- Plant press and start-up supplies
- Streak plates
- Magnets
- Hardness point set
- Magnifying glasses
- Insect pinning equipment
- Adjustable spreading board

Administrative Supplies

- Index boxes
- Paper Trays

Display

- Plastic bins
- Specimens
- Specimen mounts
- Rocks
- Minerals
- Polished and unpolished stones
- Fossils

Library Holdings

- Complete library of field guides and identification books

Client Requirements

Before *Nature Exchange*[™] can be installed, clients must procure the following items¹:

- Base wall paint colour
- Electrical Work
- Maintenance lighting
- Plumbing: sink and tap
- Flooring
- Lighting components

¹The *Nature Exchange*[™] design package includes a detailed drawing and specification set and purchasing information. The client is responsible for the provision of supplies and labor. *Nature Exchange*[™] designers will provide customized plan and specs.



Technical Specifications

Customize your *Nature Exchange*™

Work with our design team to devise a customized turnkey package that fits your facility and its visitor goals perfectly.

Selection of extras:

- Computer, monitor and printer
- Sound system
- Selection of environmental sounds
- Stereomicroscope
- Wentz-scope
- Safety glasses
- Aprons
- Photo album and sleeves
- Pin-up boards
- Lamination unit
- Sterilization unit
- Craft Supplies
- Scissors
- Crayons
- Construction paper
- Glue
- Paint, brushes and stand
- Animal impressions
- Plaster





The Guiding Principles of Ethical Collecting

In order to acknowledge each institution's important philosophical, ethical and legal responsibilities, criteria have been established to facilitate public understanding and daily operations.

Statement of Responsibility

Educational institutions concerned with the stewardship of the living world and the preservation of biodiversity, must provide leadership in the following areas:

- Teaching conservation ethics to the communities that they serve and the daily living of those values.
- Developing a culture of caregiving for all living species.
- Promoting laws and agreements regarding acquisition, possession and trade of all natural items.

Nature Exchange[™] guidelines vary depending on the institution, their philosophies and their geographical location.

Trading Guidelines

Example From *The Dallas Zoo's Nature Exchange*[™]:

- No items will be traded from the institution's collection, living or dead, plant or animal.
- No items regulated by the U.S. Endangered Species Act, or other local, national or international regulations or agreements, will be traded. Specific requirements for confiscation and reporting will be strictly adhered to (e.g. no eggs, feathers or nests).
- No items that involve taxidermy, whether skins, furs or mounted specimens will be traded.
- "Killed" items will not be accepted for trading; however, points will be awarded for information, sharing and understanding. Items will be sent home with suggestions for disposal.
- "Hunted" items will be accepted for trade; however, fewer points will be awarded than if the item was "found".
- "Found" items will be accepted for trade, based upon legal, ethical and sanitary considerations.



The Guiding Principles of Ethical Collecting cont . . .

Examples of Tradable Items From *The Dallas Zoo's Nature Exchange*™

Artwork

Items that act as interpretations, copies or artistic representations of the natural work will be accepted for trade, including photographs, drawings, sculptures, books, stories, castings and rubbings, with due consideration given to storage and tradability issues.

Non-Living Items

Items that will be accepted for trade include rocks, fossils, sand and dirt, with careful consideration of legal issues called into question by the acts of such collecting activity.

Living Items

Specific items that will be accepted for trade include plant materials, seeds, leaves, pressed plants, wood and animal materials, such as:

- Homes: shells, cocoons, wasps nests, spider webs;
- Cast-offs: hair, teeth, antlers, snake skins;
- Bones: bones, turtle shells, exoskeletons (crustaceans, bugs, butterflies).





The Guiding Principles of Ethical Collecting Leave no Trace Policy

Allow others a sense of discovery by leaving rocks, plants, archaeological artifacts and other objects of interest as you find them.

Minimize Site Alterations

Leave areas as you found them. Do not dig trenches for tents or construct lean-tos, tables, chairs or other rudimentary improvements. If you clear an area of surface rocks, twigs or pine cones replace these items before leaving. For high-impact sites, it is appropriate to clean up the site and dismantle inappropriate user-built facilities, such as multiple fire rings and constructed seats or tables. Consider the idea that good campsites are found and not made.

In many locations, properly located and legally constructed facilities, such as a single fire ring, should be left in place. Dismantling them will cause additional impact because they will be rebuilt with new rocks and thus impact a new area. Learn to evaluate all situations you find.

Avoid Damaging Live Trees and Plants

Avoid hammering nails into trees for hanging things, hacking at them with hatchets and saws, or tying tent guy lines to trunks—thus girdling the tree. Carving initials into trees is unacceptable. The cutting of boughs for use as sleeping pads creates minimal benefit and maximum impact. Sleeping pads are available at stores catering to campers.

Picking a few flowers does not seem like it would have any great impact and, if only a few flowers were picked, it wouldn't. But, if every visitor thought "I'll just take a few," a much more significant impact might result. Take a picture or sketch the flower instead of picking it. Experienced campers may enjoy an occasional edible plant, but they are careful not to deplete the surviving vegetation or disturb plants that are rare or are slow to reproduce.

Leave Natural Objects and Cultural Artifacts

Natural objects of beauty or interest such as antlers, petrified wood or colored rocks add to the mood of the backcountry and should be left so others can experience a sense of discovery. In national parks and many other protected places, it is illegal to remove natural objects.

The same ethic is applicable to cultural artifacts found on public lands. Cultural artifacts are protected by the Archaeological Resources Protection Act. It is illegal to remove or disturb archeological sites, historic sites or artifacts such as pot shards, arrowheads, structures and even antique bottles found on public lands.



With increasing pressure on institutional budgets, science centers, aquaria, museums, zoos, and botanic gardens are looking for evidence that visitors are not just exploring scientific ideas and ways of thinking, but are also actively learning from them.

Nature Exchange™ Learning Behaviours

To understand how *Nature Exchange™* encourages learning, Science North (Canada) and Techniquest (UK) studied¹ children's experience with *Nature Exchange™*. The study found that eight discrete learning behaviors occur as part of the *Nature Exchange™* interaction, which can be grouped into three categories that reflect increased interaction and depth of involvement.

Initiation Behaviors — visitors feel safe

1. Test out the activity
2. Spend time watching others engaging in the activity
3. Acquire information and assistance from staff and visitors

Visitors need to feel safe committing themselves to an activity, especially in a public setting. Initiation behaviors permit visitors to “test the waters” with minimum personal risk. This can be seen as the first step in learning.

Transition Behaviors — visitors get motivated

4. Repeat the activity
5. Express positive emotional responses in reaction to engaging in the activity

Smiles and laughter indicate that visitors are comfortable and ready to engage more thoroughly in the activity. Regardless of whether visitors repeat the activity to master functions or to observe different outcomes, the experience leads to a more committed and motivated learning behavior.

Breakthrough Behaviors — visitors become involved

6. Refer to past experiences while engaging in the activity
7. Seek and share information
8. Test variables, make comparisons and use information gained from the activity

When visitors relate activities and learning to their everyday life, a personal level of comfort is established that encourages a free flow of ideas and exchanges — this is where the real learning occurs.

An analysis of the *Nature Exchange™* visitor experience indicates that visitors rapidly pass through the first two behavior categories and that high levels of “Breakthrough Behaviors” occur on a regular basis.



Nature Exchange™ Learning Experience

Visitors refer to their own experiences

Visitors commonly refer to their own experiences when presenting a trade item, either by mentioning where it had been found or how they discovered its identity.

Examples:

“I found a beaver stick when we were camping on the French River.”

“I found this in a raspberry patch near my house.”

Visitors seek and share information

Seeking and sharing information are behaviors that permeate the entire experience — before and during the visit. Visitors study their trading items and are eager to share their new found information with staff.

Examples:

“This rock has a lot of colors.”

“This is fluorite...when we scratch it with a nail, the hardness test says it’s fluorite.”

Visitors are engaged, involved and motivated

When visitors describe, discuss and draw conclusions about their item with a staff person, they are profoundly engaged and involved. The trading activity takes 5 to 40 minutes. This level of engagement and motivation indicates a rich learning experience about the natural items brought in by the traders and encourages a commitment to learning outside the science center and into the home environment.

Examples:

“I know that starfish eat them and sea gulls too. They open them and eat them.” (A visitor, trading clam shells.)

“Fascination is impossible to teach — it’s too personal. It has to come from exciting experiences and unexpected discoveries and it becomes the ground in which knowledge takes root and grows. The levels of engagement we can see and document in the Nature Exchange™ are the stepping-stones of fascination and the building blocks of knowledge. I have seen it in my son and I have heard it from countless parents.”

- Dr. David Pearson, Co-Director,
Laurentian University & Science North’s Graduate
Diploma Program in Science Communication



Nature Exchange™ Testimonials

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“Kidspace have had the *Nature Exchange™* operating for almost two years now and it has been wildly successful. It's like we're tricking kids into learning new facts under the guise of fun.”

—*André Campbell, Lead Museum Educator*

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“One of the greatest benefits of *Nature Exchange™* is the chance for children to experience natural objects they would not normally encounter in their everyday lives.”

—*Alexis Nadeau, Outdoor Education Coordinator*

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“*Nature Exchange™* allows kids to get into science and it is important to me because I have found a lot of cool stuff to collect and I have learned things that I didn't know.”

—*Gabriel Galicia, 12 years old*

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“What I really love about the *Nature Exchange™* is that it encourages the kids to interact with nature. Families get to connect with one another while enjoying all of the opportunities that the *Nature Exchange™* provides.”

—*Ted Tegart, Lead Museum Educator*

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Nature Exchange™ Testimonials

“My Grade 3 students love the *Nature Exchange™* so much that we created a similar set up in our classroom that we use on a daily basis as we prepare for our visits to the science centre....the learning impact is impressive and measurable.”

–North Bay Teacher

“I have traded at the *Nature Exchange™* since I was 9 years old. That’s where I discovered the world of insects... and this is where I discovered my love for insects which led me to pursue my University Degree in Entomology.”

–University of Alberta student

“The ability to have the *Nature Exchange™* inspire our visitors seek out science experiences while they are away from our centre is brilliant!”

–Science North Staff Scientist