

BENEATH THE CLOUDLINE

Beneath The Cloudline

Literature, STEM & Stewardship Unit Study

A Multidisciplinary Guide for Homeschool Families, Co-ops, Classrooms, and Book Clubs

By Patrick LaJuett

Recommended for ages 13+ / Grades 7-10

A fantasy about fixing what's broken in a divided city.

1. Welcome to Halidom

For Parents and Educators

Beneath the Cloudline is a hopeful science-fantasy adventure set in Halidom, a vertical city divided between the people who live in towers above the clouds and the workers who maintain the city from below.

When a young climber named Jax and a tower-born engineer named Elyra begin questioning what they have been taught about one another, they uncover a forgotten history and a much larger problem: the systems keeping their city alive are beginning to fail.

At its heart, the story asks a simple question:

When something is broken, do we fight over what remains, or learn how to repair it together?

The novel brings together adventure, engineering, biology, environmental systems, communication, faith, family, social division, and the dignity of practical work.

This guide uses those ideas as starting points for additional exploration.

It is not intended to turn every chapter into an assignment.

Read the story first. Wonder about it.

Then use Halidom as a doorway into science, engineering, history, philosophy, writing, and discussion.

Content Guide

Recommended age: 13+

The novel contains:

- No profanity
- No sexual content
- Mild romance
- Non-graphic fantasy/action violence
- Physical peril, falls, injuries, dangerous machinery, and environmental threats
- Political intimidation and social conflict
- Themes involving faith, family, responsibility, sacrifice, and reconciliation

The emphasis remains on courage, cooperation, repair, and hope.

How to Use This Guide

Use all of it or only the sections that interest your student.

Activities can be completed individually, as a family, or in a homeschool co-op.

The guide is especially suited for:

- Literature study
- General science
- STEM enrichment
- Engineering exploration
- Creative writing
- Family discussion
- Homeschool co-ops
- Teen book clubs

The most important tool is curiosity.

2. A City That Has to Work

Halidom is more than a setting.

It is a collection of systems.

Water has to move.

Food has to grow.

Buildings have to stand.

People and supplies have to travel vertically.

Ropes have to hold.

Machines have to be maintained.

Messages have to travel.

When one part fails, other parts can fail with it.

That makes Halidom a good introduction to **systems thinking**.

Systems Thinking

Choose one system from the novel:

- The Cloudline
- The tower network
- The Rooted pulley system
- Food production

The Bloom

- Rootbane
- Communication
- The Whisper Network

Write the system in the middle of a sheet of paper.

Now ask:

What does this system need to work?

Draw those connections.

Then ask:

What depends on this system?

Add those connections too.

Keep going.

Soon you may discover that nothing operates alone.

Think About It

What happens when a society becomes dependent on a system that very few people understand?

Is knowing how to use technology the same thing as knowing how to maintain it?

What systems in your own life would become difficult to repair if specialists disappeared?

3. Earth Science: The Ground Beneath Halidom

Halidom stands on land that was once underwater.

The surrounding landscape contains limestone, fossilized coral, salt deposits, and other evidence of an ancient seabed.

That matters because geology helps determine what civilizations can build.

Stone becomes construction material.

Minerals affect soil.

Water follows the contours of rock.

Available materials influence architecture.

Even groundwater chemistry can change depending on what lies beneath it.

Research: Limestone

Find out how limestone forms.

Then answer:

1. **What organisms can contribute to limestone formation?**
2. **What does limestone tell geologists about an area's past?**
3. **How can marine fossils be found far from today's oceans?**
4. **What happens when slightly acidic water moves through limestone?**
5. **Why has limestone been useful as a building material throughout history?**

Materials Shape Civilization

Walk through your house or neighborhood.

Identify five building materials.

For each, ask:

- **Where did it originally come from?**
- **Is it natural or manufactured?**
- **Is it renewable?**
- **Is it produced locally or transported?**
- **Why was this material chosen?**
- **What could replace it if it became unavailable?**

Halidom's people build with what they have.

So do we.

4. Water, Salt, and the Cloudline

The Cloudline is one of Halidom's largest engineered systems.

It looks like a layer of mist suspended between the towers, but it also helps manage water and control the environment.

Halidom built the Cloudline as part of its survival infrastructure. The division between the people above and below it came later; the system itself was not originally designed to separate social classes.

Several real technologies can help us think about how such a fictional system might work.

Fog Harvesting

Fog contains tiny droplets of water.

Fine mesh can capture those droplets. As they combine, they become large enough to run down the mesh and into a collection system.

Research modern fog collectors.

Where are they used?

Why are certain climates better suited to them?

Desalination

Salt water cannot be used for many purposes without treatment.

Research one method of desalination:

- Distillation
- Reverse osmosis
- Solar evaporation

What are its advantages?

What does it require in energy or equipment?

Soil Salinity

Plants need water, but too much salt in soil can make water difficult for roots to absorb.

Research the term **soil salinity**.

How can salt damage crops?

Why might controlling salt levels matter in an agricultural system?

Discussion

Halidom's founders used technology to solve enormous survival problems.

But later generations became dependent on systems they didn't fully understand.

What is the difference between:

using a system

and

understanding a system?

5. Physics: Ropes, Pulleys, and Counterweights

The Rooted live and work in a vertical environment.

They use ropes, scaffolds, pulleys, baskets, brakes, and counterweights to move:

- people

- tools
- food
- supplies
- maintenance equipment

These aren't decorations in the story. They are infrastructure.

Jax even redesigns a rope safety system after noticing that its brake behaves differently depending on the angle of a fall. He changes the anchor spread, adds another catch point, and has an experienced climber test the design at multiple angles.

That is engineering.

He asks the important question:

When does this system fail?

Vocabulary

Force: A push or pull.

Load: The object being moved.

Gravity: The force attracting objects toward Earth.

Tension: Pulling force transmitted through a rope or cable.

Friction: Resistance between surfaces.

Pulley: A wheel that guides a rope or cable and can redirect force.

Counterweight: A weight used to balance or assist another load.

Mechanical advantage: A system's ability to multiply or redirect force.

6. Hands-On: Build a Counterweight Lift

Materials

- Two paper cups
- String
- Pencil, dowel, or smooth rod
- Tape
- Coins, washers, or pebbles
- Small objects to serve as cargo

Build It

Tie one cup to each end of the string.

Run the string over the pencil or dowel.

Hold the dowel horizontally.

Both cups should hang freely.

You now have a simple counterweight system.

Experiment 1: Balance

Put equal weight in both cups.

What happens?

Remove one item from one side.

What happens now?

Experiment 2: Change the Load

Try different combinations of cargo and counterweight.

Record what happens.

Cargo	Counterweight	Result

Engineering Challenge

Imagine the cargo cup represents a maintenance worker carrying tools.

Draw a safer version of your lift.

Label:

- Load
- Counterweight
- Rope
- Pulley
- Platform
- Brake
- Anchor
- Backup safety system

Think Like Jax

Do not ask only:

Does it work?

Ask:

How can it fail?

What would happen if:

- the rope became wet?
- the anchor shifted?
- the counterweight were too heavy?
- the load swung sideways?
- the brake worked only during a straight fall?

Engineers learn as much from failure conditions as from successful operation.

7. Knots as Stored Knowledge

A useful knot is more than tangled rope.

Someone discovered:

- where the line should cross
- where friction should occur
- how tension should be distributed
- whether the knot should tighten
- whether it should release easily

That pattern was remembered.

Then taught.

Then taught again.

A knot can preserve technical knowledge without electricity, software, or written instructions.

That idea appears throughout Halidom.

The Rooted preserve knowledge through physical practice. Children learn knots, rigging, and rope work. Later, Jax and Zinn even teach tower children these skills, turning practical knowledge into a bridge between the two cultures.

Learn Three Knots

Try learning:

- Square knot
- Bowline
- Figure-eight knot

Safety note: Practice knots should never be relied upon for actual climbing or life-safety situations without proper equipment and qualified instruction.

For each knot, record:

- **What is it designed to do?**
- **Does it tighten under load?**
- **Is it easy to untie?**
- **What happens if it is tied incorrectly?**

Think About It

Can an object contain knowledge?

Consider:

- A knot
- A handmade tool
- A recipe
- A quilt pattern
- A fishing lure
- A machine part
- A musical instrument

What knowledge exists in your own family that might never appear in a textbook?

8. Thermals, Gliders, and Flight

Birds can rise through the sky without constantly flapping.

Gliders can do something similar.

They use rising air.

When sunlight warms the ground, the ground can warm the air above it. That warmer air may become less dense than the surrounding air and rise.

This rising air can form a **thermal**.

In the novel, Jax learns that people once launched gliders from Halidom's gardens using rising air from the city. He watches hawks circle on invisible columns of air without beating their wings.

Observation

On a warm day, watch large soaring birds.

You may see:

- Hawks
- Vultures
- Eagles
- Gulls

If they circle without flapping much, ask:

What are they riding?

Paper Glider Experiment

Build a paper glider.

Measure:

- Flight distance
- Flight time
- Direction
- Stability

Then change one feature:

- Wing width
- Nose weight
- Wing angle
- Tail shape

Test again.

Important Experimental Rule

Change only one variable at a time when possible.

Otherwise, you may not know which change caused the result.

9. Sound and Resonance

Sound is vibration traveling through matter.

It can move through:

- Air
- Water
- Wood
- Metal
- Stone
- Rope

A stretched string or rope can also vibrate.

Pitch changes depending on factors such as:

- Length
- Thickness
- Material
- Tension

The characters of Halidom often describe ropes and systems as "singing."

That isn't entirely poetic.

Rubber-Band Experiment

Stretch several rubber bands around an empty box.

Pluck them.

Try:

- Tightening one
- Loosening one
- Using a thicker band
- Shortening the vibrating length

What changes the pitch?

Resonance

Objects have frequencies at which they vibrate particularly well.

When an outside vibration matches one of those frequencies, the response can become stronger.

This is called **resonance**.

Resonance matters in:

- Musical instruments
- Bridges
- Aircraft
- Engines
- Buildings
- Turbines

- Machinery

In Halidom, sound and resonance become part of a much larger environmental containment system. The fictional technology goes beyond present-day capabilities, but the underlying idea that organisms and machines can respond to vibration is real.

Research

Find an animal that detects something humans cannot easily sense.

Examples might involve:

- Very low-frequency sound
- Very high-frequency sound
- Vibration
- Magnetic fields
- Pressure changes
- Chemical signals

What advantage does that ability give the animal?

10. Communicating Across a Divided City

At first, Jax and Elyra cannot simply meet.

They live on opposite sides of a society that forbids unsanctioned movement across the Cloudline.

So they communicate with reflected light.

Elyra discovers old maintenance signal codes and uses a mirror-slate to send flashes toward Jax. Jax answers using a polished metal surface.

Eventually, their flashes become fast enough to feel like conversation.

Real-World Research

Look up:

- Signal mirrors
- Semaphore
- Heliographs
- Ship signal lamps
- Morse code

How can only two signals - short and long - represent an entire alphabet?

Create Your Own Code

Create symbols for ten letters using only:

SHORT FLASH

and

LONG FLASH

Send a message to another person using a flashlight.

Can they decode it?

Design Challenge

Imagine there is:

- No phone
- No internet
- No radio
- No shouting across the distance
- A risk that written messages will be intercepted

Design a communication system using only things available in Halidom:

- Mirrors
- Flags
- Bells
- Lanterns
- Rope

Knots

- Chalk
- Drums

Discussion

Which matters more:

the communication technology or the shared code?

A mirror can reflect light. But communication happens only if someone understands what the flashes mean.

11. Biology: The Bloom

The Bloom began as a solution.

Scientists deliberately engineered it to prepare for ecological and resource problems that didn't exist yet. They designed it as a useful living system, not a weapon.

That makes what follows more interesting.

The problem is not that someone deliberately created something evil.

The problem is that a powerful biological solution moved beyond the conditions its creators expected.

Imagine This Plant

Scientists develop a plant that:

- Grows extremely quickly
- Survives poor soil
- Produces edible material
- Creates strong fiber
- Can be processed for fuel
- Requires little maintenance

Sounds useful.

Now ask:

1. **What happens if it escapes farms?**
2. **What native plants might it outcompete?**
3. **How much water might it consume?**
4. **What animals might depend on it?**
5. **Could it alter existing habitats?**
6. **How could it be controlled?**
7. **Who would be responsible if it spread?**

The Bigger Question

A technology can work exactly as designed and still produce consequences its designers did not predict.

Good intentions do not remove the need for caution.

Neither does intelligence.

12. Rootbane: The Solution to the Solution

When the Bloom became dangerous, another biological solution was created.

Rootbane.

Rootbane beetles were engineered specifically to consume and suppress the Bloom.

Now the system becomes more complicated.

One engineered organism is being controlled by another engineered organism.

Build a Food Web

Start with:

Bloom -> Rootbane

Now ask:

- **What else might Rootbane eat?**
- **What might eat Rootbane?**
- **What happens if the Bloom disappears?**
- **What happens if Rootbane multiplies too quickly?**
- **What happens if the beetles begin consuming useful plant fibers?**

Add those possibilities to your diagram.

Your simple line will quickly become a web.

That is ecology.

Research: Biological Control

Humans sometimes use predators, parasites, diseases, or competing organisms to control unwanted species.

Find one real example.

Answer:

1. **What organism was causing the problem?**
2. **What control organism was used?**

3. **Did it work?**
4. **Were there unintended effects?**
5. **Would scientists use the same solution today?**

Debate

Scientists develop an insect that appears to eat only one dangerous invasive plant.

Laboratory testing looks promising.

Would you release it?

Before answering, list the evidence you would want first.

What should scientists test?

How long should they observe it?

Who should decide?

There is no required answer.

The goal is to think beyond the first solution.

13. Intelligence, Wisdom, and Expertise

Halidom was built by intelligent people.

They understood engineering.

Biology.

Water.

Materials.

Automation.

Architecture.

Yet intelligence did not prevent every failure.

Define the Terms

Intelligence is:

Wisdom is:

Can someone be intelligent without being wise?

Can someone possess wisdom without advanced education?

Two Kinds of Questions

Technical knowledge may ask:

- **Can we do this?**

Wisdom may also ask:

- **Should we?**

- **What happens afterward?**
- **Who carries the risk?**
- **Who benefits?**
- **Who maintains it?**
- **Can we reverse it if we are wrong?**

Expertise Matters

The lesson of Halidom is not that experts are bad. Halidom needs experts.

It also needs:

- Engineers
- Mechanics
- Climbers
- Farmers
- Technicians
- Historians
- Builders
- Caregivers
- People willing to ask uncomfortable questions

The danger appears when knowledge becomes disconnected from humility, consequences, or the people affected by decisions.

Elyra confronts this directly when she asks why the towers call Groundlings inefficient while still depending on their manual labor. Her teacher answers that her job is to optimize the inherited system, not question it. Elyra keeps questioning anyway.

Discuss

Which is harder:

- **How do we build it?**
- **or what happens after we build it?**
- **Why?**

14. Practical Knowledge and the Dignity of Work

The Rooted are not people without knowledge. Their knowledge looks different.

They understand:

- Rope
- Tension
- Tools
- Weather

Materials

- Agriculture
- Scaffolding
- Machinery

Repair

- Physical risk

They learn much of their expertise by doing.

This is sometimes called **tacit knowledge** - knowledge that can be difficult to fully explain in words.

Try It

Choose something you know how to do well.

Maybe you can:

- Throw a baseball
- Play an instrument
- Draw
- Cook
- Ride a skateboard
- Use a tool
- Tie a knot
- Play a game

Write instructions for someone who has never done it.

Be extremely specific.

- **Was explaining it harder than doing it?**
- **Why?**

Interview a Skilled Person

Interview someone who works with their hands or relies heavily on practical experience.

Possible subjects:

- Mechanic
- Carpenter
- Electrician
- Plumber
- Farmer
- Welder
- Machinist
- Nurse
- Cook
- Gardener
- Technician

Ask:

1. **What skill took you the longest to learn?**
2. **What can experience teach that a book cannot?**
3. **Can you sometimes tell something is wrong before you know exactly why?**
4. **What mistake do beginners commonly make?**
5. **Who taught you?**
6. **What knowledge would you most want to pass on?**

15. Jax and Elyra: Two Ways of Knowing

Jax and Elyra approach problems differently.

Jax grows up working with physical systems. He understands:

- ropes
- loads
- movement
- tools

materials

- maintenance

Elyra grows up inside the tower system. She understands:

- archives
- codes
- engineering
- records
- formal systems
- analytical tools

Neither knows everything. That matters.

Character Study

Create three columns.

JAX

- What does Jax know?
- How did he learn it?
- What does he notice?
- Where are his blind spots?

ELYRA

- What does Elyra know?
- How did she learn it?
- What does she notice?
- Where are her blind spots?

TOGETHER

What problems can they solve together that neither could solve alone?

Discussion

Which is more valuable:

- formal education or practical experience?

Now replace **or** with **and**.

- Does the question change?

16. Stewardship and Repair

Halidom survives because somebody maintains it.

- Someone checks the rope.
- Someone repairs the pipe.
- Someone replaces the bracket.
- Someone grows the food.
- Someone notices a strange vibration.
- Someone catches the failure before it becomes a disaster.
- Maintenance rarely looks dramatic when it succeeds.
- The rope does not break.
- The water keeps flowing.
- The bridge remains standing.
- Dinner appears.
- The machine starts tomorrow.

Maintenance Culture

What are the invisible systems in your household?

Examples:

1. Cooking
2. Laundry
3. Budgeting
4. Grocery shopping
5. Vehicle maintenance
6. Cleaning
7. Yard work
8. Scheduling
9. Caring for animals
10. Home repair

What happens if nobody maintains them?

Repair Beyond Machines

What might maintenance look like in:

- **A friendship?**
- **A family?**
- **A community?**
- **A garden?**
- **Your health?**
- **Your faith?**
- **Your neighborhood?**

The Repairer's Challenge

Find one thing that needs attention.

It might be:

- A loose hinge
- A bicycle
- A messy tool area

- A broken toy
- A garden bed
- A neglected piece of equipment
- Litter in an appropriate public area
- A family collection that needs organizing

Ask permission where necessary.

Then:

OBSERVE

- **What is wrong?**

UNDERSTAND

- **Why did it happen?**

PLAN

- **What tools, knowledge, or help do you need?**

REPAIR

Do the work.

DOCUMENT

Take a before-and-after photograph or describe what changed.

REFLECT

- **Who benefits because you took care of it?**
- **What maintenance could keep the problem from returning?**

That is stewardship.

Noticing what has been entrusted to you and caring enough to keep it working.

17. Meet the Author: Where Halidom Came From

From Real Life to Fiction

Hi. I'm Patrick LaJuett.

I'm a marketing professional and the author of *Beneath the Cloudline*. I live and write in Maiden, North Carolina.

Halidom may be fictional, but many of its ideas began with real things I saw, places I lived in, machines I worked around, things I noticed in nature, and questions that stayed with me.

I didn't set out to write a textbook. I wanted to tell an adventure.

But when you build a fictional world, everything starts connecting.

- **Where does the water come from?**
- **Who fixes the pipes?**
- **How do people move between towers?**
- **What happens when a machine fails?**
- **Who grows the food?**
- **Who remembers how the old systems work?**

And perhaps most importantly:

Who actually keeps the world running?

Those questions became part of Halidom.

Skilled-Trades Roots

My father belonged to Local 13, Plumbers and Steamfitters. I grew up around people who built things, repaired things, and understood systems because they had spent years working with them.

That helped shape the Rooted.

The workers beneath Halidom's towers maintain equipment, repair what breaks, salvage what others discard, and often understand the city's physical systems better than the people making decisions above them.

Student Question

Find one scene where practical knowledge solves a problem that authority or technology alone cannot solve.

What does that scene suggest about expertise?

A Vine That Wouldn't Stop

After moving to North Carolina, I became fascinated by kudzu.

It can cover trees, utility poles, abandoned structures, and entire sections of landscape.

That helped inspire the visual idea of the Bloom.

The Bloom is not kudzu. It is a fictional engineered organism. But the image of a plant spreading beyond human control began with something real.

Student Research

- **Why was kudzu introduced and promoted in the United States?**
- **What benefits did people expect?**
- **What problems followed?**
- **What does its history teach us about unintended consequences?**

The Floor You Work On

Years ago, I worked in a tall office building where the floor your office occupied could feel like a status symbol.

The higher the floor, the more important someone seemed.

I always found that strange.

Eventually, that idea became literal in Halidom.

Physical elevation becomes confused with human importance.

Student Question

What other abstract ideas become physical in the novel?

Consider:

- Division
- Isolation
- Memory
- Trust
- Status

- Communication

18. Student Journalist Project

Assignment: How Real Life Became Halidom

Imagine you are writing a feature story about the author of *Beneath the Cloudline*.

Your editor gives you one assignment:

Find out where Halidom came from.

Use evidence from the novel and the World of Halidom author materials.

Questions to Investigate

The Builders

Patrick grew up in a skilled-trades family.

Where do you see that influence most clearly in the story?

Use a scene as evidence.

The Bloom

A real invasive vine helped inspire the visual idea of the Bloom.

But the fictional Bloom was deliberately engineered.

Why does that difference matter?

The Towers

How does turning social status into literal physical height make Halidom's division easier to understand?

Knots

How can a knot preserve knowledge?

Give both a practical answer and a symbolic one.

Faith and Action

What do you think this saying means within the story?

"Fear chains the hands; faith tells them to build."

The completed saying is eventually repeated as something passed down through Jax's climbing culture.

Do you agree with it?

Explain.

Write Your Article

Suggested Headline

How Real Life Became Halidom

Your article should include:

- An introduction to the author and novel
- At least three real-life influences
- At least one example from the story

- Your own interpretation
- A conclusion

Finish by answering:

What real-world question do you think the author most wants readers to keep thinking about after the story ends?

Support your answer.

19. Build Your Own World

Worldbuilding does not begin with strange names.

It begins with questions.

Start with this one:

What keeps your fictional world running?

If your city has lights, where does the power come from?

If people eat, who grows the food?

If buildings are tall, who repairs them?

If people travel through portals, who fixes a broken portal?

If dragons carry cargo, who feeds the dragons?

Every answer creates another question.

Follow them.

That is when a fictional world starts becoming believable.

Your Turn

Invent a settlement.

Maybe it is:

- A floating city
- An underground village
- A moving fortress
- A desert tower
- A settlement inside a crater
- A city built in a forest canopy

Now answer:

1. **Where does the water come from?**
2. **Where does the food come from?**
3. **How is waste handled?**
4. **How do people travel?**
5. **What provides energy?**
6. **What breaks most often?**
7. **Who repairs it?**
8. **Who controls the most important resource?**
9. **What happens if that system fails?**
10. **Who notices the problem first?**

You may have just discovered your story.

20. FINAL CHALLENGE: THE CLIMBER'S QUIZ

You have explored:

- Ropes
- Pulleys
- Counterweights
- Flight
- Signals

Resonance

- Environmental systems

The Bloom

- Rootbane
- Practical engineering
- Stewardship

Now find out how much you remember.

Halidom Survival Guide: The Climb Quiz

12 questions. One city. Try not to fall.

<https://www.beneaththecloudline.com/world-of-halidom/quiz>

Challenge a sibling, parent, friend, or co-op classmate.

Then come back to one final question.

What Stayed With You?

A quiz score tells you what you remember. It does not necessarily tell you what you learned.

Write down one question from this study that you are still thinking about:

Why hasn't that question left you alone?

Good stories do not always give us answers.

Sometimes they give us better questions.

NOTES FOR PARENTS AND FACILITATORS

The discussion questions in this guide are intentionally open-ended.

Students should be encouraged to:

- Support opinions with evidence
- Distinguish facts from assumptions
- Identify tradeoffs
- Consider consequences
- Listen to different interpretations
- Change an opinion when better evidence appears

The Story Is Not Anti-Technology

Technology keeps Halidom alive.

The story instead asks what happens when people become dependent on systems they no longer understand, maintain poorly, or refuse to question.

The more useful distinction is between:

Technology and the decisions people make with technology.

The Story Is Not Anti-Expert

Halidom needs knowledgeable people. It also needs humility.

Formal knowledge, practical experience, history, observation, and human judgment all contribute to solving the city's problems.

The question is not whether to trust experts.

A better question is:

What makes expertise trustworthy?

Science vs. Science-Fantasy

Students can also divide Halidom's technologies into three categories.

REAL PRINCIPLE

Examples:

- Pulleys
- Counterweights
- Thermal updrafts
- Signal mirrors
- Vibration

Resonance

- Biological control

REAL PRINCIPLE, FICTIONAL SCALE

Examples:

- City-wide environmental systems
- Extremely sophisticated ambient-powered sensing networks
- Vast interconnected resonance systems

FICTIONAL TECHNOLOGY

Elements deliberately created for Halidom's world and story.

A useful question when studying science fiction:

What real scientific idea makes this fictional technology feel believable?

OPTIONAL CO-OP PROJECT: BUILD HALIDOM

Divide students into teams.

Each team designs one part of a functioning settlement.

WATER TEAM

Design:

- Water collection
- Storage
- Distribution
- Emergency backup

TRANSPORTATION TEAM

Design:

- People movement
- Cargo movement
- Emergency evacuation
- Routes for maintenance workers

FOOD TEAM

Design:

- Agriculture
- Food storage
- Distribution
- Crop-failure backup

ENERGY TEAM

Design:

- Generation
- Transmission
- Storage
- Emergency power

COMMUNICATION TEAM

Design:

- Everyday communication
- Emergency signaling
- Long-distance communication
- Backup systems

MAINTENANCE TEAM

Your job is different.

Review everybody else's plans.

Ask:

- **How do we repair this?**
- **What parts will wear out?**
- **Who has access?**
- **What happens when power fails?**
- **Can anything be operated manually?**
- **What spare parts are required?**
- **Who is trained to fix it?**
- **What happens when that person is gone?**

When the teams finish, connect all the systems on one large map.

You may discover something important. Nobody built just one machine. Together, you built a city.

ABOUT THE AUTHOR

Patrick LaJuett is a North Carolina author, designer, and marketer. His work draws inspiration from technology, skilled trades, nature, family, and the systems that make everyday life possible.

He is the author of *Beneath the Cloudline*, a hopeful science-fantasy adventure about ordinary people trying to repair what generations before them allowed to break.

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