

Self-Reliance in the Age of Field Technology

What We've Gained, What We've Lost, and What We Choose

Nancy Crane, Director of Outings Safety
Doug Sandok, Outings Program Safety Manager
Sierra Club

How do we use technology to make outdoor programs safer without allowing it to replace good judgment, essential skills, and self-reliance?

Technology doesn't have to fail to highlight our need for essential judgment and decision making skills, or to understand the impact it has on our sense of self-reliance.

Even when working, it can change our expectations, perception of risk, what we pay attention to, and how we make decisions.



Benefits of Technology

Faster emergency signaling and rapid response
- Communicate an emergency
- Provide location

Better communication
- Field to office
- Leader to leader

Better navigation
- Higher accuracy
- Reduce navigation errors
- Help leaders confirm location

Increased environmental hazard awareness
- Weather information
- Fire information
- Other hazard information

Support and safety net for someone who is:
- Less experienced
- Less confident
- Still developing technical skills

Comfort and familiarity
- Calling or texting friends and fam
- Staying apprised of world news
- Moral support



Mt. Shasta

Contributing Factor	Type of Over-Reliance
1. Relied on Google's Gemini AI, YouTube videos, and AllTrails to plan and navigate a climb despite limited experience.	Treated technology as an expert, contributing to unrealistic expectations and inadequate preparation. Without a baseline of experience it may have been difficult to weigh these forms and sources of information.
2. Ignoring the plan/turnaround time. At 1 p.m., the group was still at 11,000 feet but continued toward the summit, reaching it at 7 p.m. *This was a human decision, and not a tech failure*	Overriding their original (more conservative) plan- continuing when they encountered a very different situation in reality, despite planning for this. Failed to appreciate the greater risk of descending in darkness.
3. Entirely dependent on digital navigation tools. Relied on AllTrails .The phone died, and the power bank failed to charge it.	Lost their only navigation aid in steep, unfamiliar terrain at night. Without a map and compass, getting off-route couldn't be remedied. Failed to plan for the limitations of electronic devices.



#TechnologyFails

- **No signal:** canyons, trees, cliffs, or other terrain can interfere with communication.
- **No power**: cold, dead batteries, forgotten charging, or damaged equipment.
- **Human error**: wrong menu, wrong contact, device turned off, or unfamiliarity with the device.
- **Delayed communication:** satellite messages are not necessarily instantaneous.
- **Accidental SOS or other unintended device actions.**
- **Bad information**: technological sources of information can be current, incomplete, misapplied, or simply wrong.

Technology doesn't have to fail to reveal our need for essential judgment and decision making skills.

Though technology can and often does change our level of required self-reliance, it can also shift the way we think about things and make decisions.



Hidden Costs

"*Knowledge* is information plus experience that can be applied to a new situation."

Technology can improve safety, but over-reliance secretly shifts how we make decisions, the skills we practice, and information we take in about our surroundings.

The Hidden Costs

1. Skill Atrophy & Lost Capability

- When digital tools handle navigation, hazard monitoring, or communication, unpracticed skills can degrade
  - Technical Skills
  - Self-Reliance & Resilience
  - What other skills might atrophy??

2. Altered Decision-Making Dynamics

Risk Compensation - "The Magic Button Problem"

Instead of thinking: "Can we safely manage this?" we may start thinking: "If something goes wrong, we can always call for help."

If leaders (or recreationalists) know that rescue is a push of a button away might they sometimes be more willing to:

- Go farther
- Take on more complex terrain
- Accept more uncertainty

Hidden Costs

2. Altered Decision-Making Dynamics (con't)

Expert Halo & Out-of-Field Deference: Overvaluing remote "expertise" over real-time, on-site observations ***and intuition***.

- **Confirmation Bias & Analysis Paralysis:**
  - Using short text/weather updates to confirm prior plans, rather than compare and think through it as a problem.
  - or we may seek more information to give us greater confidence instead of acting decisively.
- **May dilute who and how a decision is made** - no single point accountability, but better collaborative problem solving (such as how to reroute to avoid poor AQI or wildfire hazard.



Hidden Costs

3. Situational Awareness - What are we noticing and what info are we gathering?

1. **See it**

Gathering raw data and elements from your environment using your senses.

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2. **Understand it**

Making sense of the raw data by combining, interpreting, and organizing it (context).

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3. **Anticipate** what happens next

Using your perception and comprehension to forecast future events and status.



Situational Awareness

- **Cognitive Fragmentation**-
  - leaders may not immediately return to their previous level of awareness of participants and terrain.

- **Opportunity Cost: observation, conversation, reflection, connections**

If our situational awareness is compromised,

- **we are potentially gathering less direct information,**
- **less capable of understanding its importance in context,**
- **and especially limited in our ability to anticipate issues.**





The AI Shift

What's Here Now, What's Coming Next

It can:

- Interpret data
- Synthesize information from multiple sources
- Recommend options
- Create plans
- Identify potential hazards,
- Suggest routes
- Answer questions
- Help make decisions

Do your leaders know how to recognize when it's wrong?

- Is it current?
- Is it relevant?
- Does reality match the recommendation?
- Can I verify it?
- What might be missing?
- Who is making the decision?

How is Technology Impacting You?

1. Where have you or your staff become too dependent on technology in the field?

2. What changes have you observed in technical skills, decision-making, situational awareness, or team communication as technology use has increased?





Find the Sweet Spot

This is not about technology versus self-reliance.

The goal is **intentional technology-supported self-reliance** - and to let your trainees know that this is what you are doing.

Training for Technology-Supported Self-Reliance

1. **Technical Skills — Maintain the Fundamentals**
    - Navigation, including map and compass
    - Weather interpretation and changing conditions
    - Evacuation and Self-rescue
    - Wilderness medical skills

Training Tactics

- **Practice frequently and review often**
- **Estimate before checking** - Ask trainees to estimate travel time to the next landmark, expected arrival time, route difficulty, or weather changes. Compare estimates with actual outcomes and digital information
- **Teach-back** - Have trainees teach a technical skill to another trainee without a presentation or video to reveal gaps in understanding.
- **What's the weather?** - Tell the trainees a false weather forecast that you "got" from a weather app. Observe what they observe about the weather throughout the day. Debrief.
- **Practice self-evacuation** - From the field, have trainees plan and evacuate an "injured" person to the trailhead

Training for Technology-Supported Self-Reliance

2. Cognitive Skills — Strengthen Independent Judgement

- Decision-making and problem-solving
- Situational awareness and attention to the environment
- Comfort with uncertainty
- Recognizing changing conditions and knowing when to change plans
- Critically evaluating information

Training Tactics:

- **What changed?** - Show a trail or campsite, alter a few details, and ask trainees to identify what changed.
- **Spot the outlier** - Stage a scenario such as a participant gradually falling behind or becoming unusually quiet. See how soon trainees notice. Ask them if they could have known sooner and what they were paying attention to.
- **Predict what happens next** - Ask trainees to predict conditions over the next 30 minutes based on weather, terrain, group pace, and participant condition. Revisit predictions and discuss missed or useful cues.
- **No-perfect-answer scenario** - Present a situation in which every option has disadvantages. Ask trainees to identify acceptable and unacceptable risks, likely consequences, and what information would change their decision.
- **Explain your reasoning** - Have trainees talk through why they chose a route, set a turnaround time, continued, or stopped. Evaluate the reasoning and information available at the time—not just the outcome.
- **Making mistakes is okay most of the time -** role model making wrong decisions and then debrief around this idea. Explore which decisions are okay to get wrong and which ones are not.
- **Attention-switching practice** - Have trainees complete a low-risk navigation or observation task, pause for a discussion, then resume and identify what they missed and then discuss what they noticed about how they restored awareness.

Training for Technology-Supported Self-Reliance

3. **Interpersonal Skills — Build Collective Awareness**

- Clear communication and shared decision-making
- Debriefing and learning from experience
- Personal Reflection
- Mentoring and developing less-experienced leaders
- Building shared mental models so everyone understands the plan, risks, and decision points

Training Tactics:

- **Independent assessments** - Ask two trainees to assess the same situation separately before comparing conclusions and discussing differences.
- **Evening co-leader debrief** - Build in time for trainees to review the day with another trainee for an hour to discuss group dynamics, the day's events, and safety observations. Debrief as a whole group what they they learned and what was valuable about that time.
- **Debrief decisions, not just outcome** - Review what the group noticed, what was communicated or missed, why a decision was made, and what should change next time.
- **Where are we? Where are we going?** Drop off a group of trainees in an unfamiliar location, give them a map but do not show them where they are, but show them where they need to meet you in a day, and say goodbye!



Training for Technology-Supported Self-Reliance

4. **Technology Competence — Use Tools Intentionally**
    - Define what, when, and why of appropriate use of technology.
    - Have backup plans for technology failures
    - Understand the types and risks of overreliance
    - Develop AI literacy: understand its strengths and limitations, verify recommendations, check the currency of information

Training Tactics:

- **Technology impacts** - Educate your trainees about the impacts of tech and where it might entice or influence them.
- **Communication reasoning** - Propose difficult scenarios and ask trainees to decide if and when they would contact administration, a doctor, or SAR. Spend time on having them share their reasoning, and also on what they would do if communications weren't available.
- **Communication failure** - Simulate a satellite message that does not go through. Ask trainees how they would recognize this failure, follow their communications plan, and determine the next appropriate action.
- **AI and app verification** - Provide an AI-generated plan, route suggestion, or forecast with a plausible error. Have leaders check authoritative sources, confirm relevance to the actual location and conditions, and identify missing information.



Norms for Leaders

Set clear expectations for tech use in the field:

- Limits on personal call times
- No media
- Required co-instructor debriefs with particular focus on how they intentionally used or did not use tech and how to improve their tech habits.
- No wearing ear buds except at low volume in your tent.
- Consider banning cell phones and other devices for staff for the first section of a trip.
- If calling for advice, coach your leaders to explain their, assessment, options, and uncertainties—not just ask “What should we do?”
- Set expectation that if a leader calls for advice that they should be able to figure out, you will push back and tell them to figure it out on their own.
- Plan and articulate failure before each trip.
- Report failures and near misses - Document the role of technology, unexpected limitations, and incidents so the organization can learn and improve its practices.

Intentional Technology-Supported Self-Reliance

What are 3 action items you want to take once you get home based on this information?

What aspects of your training do you want to modify or add based on this info?

What “tech norms/expectations ” do you need to create for your field staff?



1. Technology is a tool—not a decision-maker.

2. The biggest (technology) risk may be what we stop practicing.

3. Be intentional about adoption of technologies.

Questions?

