AI-04741 Blooms Taxonomy Simplified

Bloom's Taxonomy: Understanding the Framework and Its 22 Guidelines

Bloom's Taxonomy is an educational framework that organizes learning objectives by levels of cognitive complexity. It helps you understand how people acquire knowledge, develop understanding, apply what they know, and eventually evaluate or create something new.

Rather than simply asking, "Do I know this?", Bloom's Taxonomy encourages you to ask:

> Can I remember it, explain it, use it, analyze it, evaluate it, and create something with it?

This makes it useful for education, self-directed learning, professional development, technical troubleshooting, decision-making, and lifelong learning.

1. The six pillars of Bloom's Taxonomy

The revised version of Bloom's Taxonomy, published in 2001 by Lorin Anderson and David Krathwohl and colleagues, uses six cognitive levels, arranged from lower to higher-order thinking.

1. Remember

Recall

Retrieve facts, definitions, concepts, and previously learned information from memory.

Key question: What do I know?

Examples: Recall the OSI model layers, memorize a command, or list the six levels of Bloom's Taxonomy.

2. Understand

Comprehension

Explain ideas, interpret information, and connect concepts in your own words.

Key question: Can I explain it?

Examples: Explain why a DNS record resolves to an IP address or summarize how a solar monitoring system works.

3. Apply

Execution

Use knowledge, procedures, and principles in a real or new situation.

Key question: Can I use it?

Examples: Configure a Docker container, execute an SSH command, or apply a troubleshooting procedure to a Home Assistant VM.

4. Analyze

Decomposition

Break information into parts, identify relationships, and determine how components work together.

Key question: How does it work, and what are the relationships?

Examples: Analyze why one HAOS instance redirects to another, separate network and DNS issues, or identify the possible causes of a solar inverter failure.

5. Evaluate

Judgment

Make evidence-based judgments using defined criteria, standards, or constraints.

Key question: Is this effective, reliable, or appropriate based on the evidence?

Examples: Evaluate whether Cloudflare Tunnel or Tailscale meets a remote-access requirement, or assess whether a proposed backup strategy is adequate.

6. Create

Synthesis

Combine knowledge and skills to design, build, plan, or produce something original or useful.

Key question: What can I design or build?

Examples: Design a hybrid-cloud clinic infrastructure, create an automated solar monitoring dashboard, or develop a fault tree for system diagnosis.

The progression

Remember

Understand

Apply

Analyze

Evaluate

Create

From recalling knowledge to producing and designing new solutions.

Important: The levels are a useful progression, not a rigid staircase. Real learning often involves moving between levels, and some tasks require analysis or creation before all lower-level knowledge is mastered.

2. The 22 Guidelines Based on Bloom's Framework

The following 22 guidelines translate Bloom's Taxonomy into practical principles for learning, problem-solving, teaching, and personal development.

These are practical guidelines derived from the framework, not an official list of 22 rules published by Bloom.

01

Start with clear learning objectives

Define what you want to be able to do, not just what topic you want to study.

Example: Instead of "Learn Home Assistant," use "Configure and troubleshoot two independent HAOS instances on Hyper-V."

02

Build a foundation of knowledge

Learn essential vocabulary, facts, definitions, and core principles before attempting complex tasks.

Example: Understand IP addresses, ports, DNS, and virtual networking before troubleshooting a VM connection.

03

Explain concepts in your own words

Test whether you understand an idea by explaining it without copying the source material.

Example: Explain the difference between a Docker container and a virtual machine to someone unfamiliar with virtualization.

04

Connect new knowledge to existing knowledge

Relate new concepts to something you already understand. This helps build a more integrated mental model.

Example: Connect the OSI networking model to your experience with Cisco switches, routers, and Home Assistant.

05

Use active recall

Retrieve information from memory rather than relying exclusively on rereading or looking at notes.

Example: Close your reference guide and list the steps for creating a Hyper-V VM.

06

Practice using knowledge

Apply what you learn through exercises, experiments, and real tasks.

Example: Deploy a test Docker container and verify its network connectivity.

07

Move beyond memorization

After learning a procedure, understand why each step matters.

Example: Don't just memorize how to attach a VHDX file. Understand boot mode, disk format, and the VM's generation requirements.

08

Break complex problems into smaller parts

Decompose a large problem into manageable components that can be tested independently.

Example: Divide a solar monitoring problem into power supply, network connectivity, API access, inverter status, and dashboard display.

09

Identify cause-and-effect relationships

Explore how one condition leads to another, and distinguish correlation from proven causation.

Example: Determine whether a Wi-Fi disconnect caused missing solar monitoring data or whether the controller itself stopped reporting.

10

Compare multiple approaches

Consider different methods, architectures, or solutions and identify their trade-offs.

Example: Compare running a monitoring service directly in Docker versus using a Home Assistant integration.

11

Question assumptions

Identify assumptions that may be incorrect, incomplete, or unverified.

Example: Do not assume a failed dashboard means the solar panels are not producing electricity.

12

Use evidence to test hypotheses

Form a possible explanation and collect information that can support or contradict it.

Example: If you suspect a network issue, test connectivity, inspect logs, and compare the behavior of other devices.

13

Establish evaluation criteria

Decide how you will measure whether a solution meets your requirements.

Example: Evaluate a remote-access design based on security, availability, ease of maintenance, and recovery after an outage.

14

Distinguish facts from interpretations

Separate observed data, assumptions, hypotheses, and conclusions.

Example: "The API returned HTTP 403" is an observation. "The API endpoint requires authorization" is an interpretation that should be checked against the available evidence.

15

Evaluate solutions against real constraints

Consider the practical limitations of your environment, budget, time, equipment, and skills.

Example: Assess whether an on-premises clinic server design can continue operating when the internet connection is unavailable.

16

Design solutions rather than only consume information

Use your knowledge to develop a plan, architecture, workflow, or prototype.

Example: Create a network topology for your homelab, including VLANs, servers, backup paths, and remote access.

17

Experiment and iterate

Build, test, observe, adjust, and test again. Treat unsuccessful attempts as information about the system.

Example: Test a configuration in a nonproduction HAOS instance before applying changes to the primary instance.

18

Create artifacts that demonstrate understanding

Produce something tangible that shows what you have learned.

Example: Write a troubleshooting guide, draw a fault tree, document a deployment, or build a working dashboard.

19

Explain and teach others

Teaching forces you to organize your understanding and identify knowledge gaps.

Example: Explain your DockerLab architecture to a family member or write instructions that another person can follow independently.

20

Reflect on your learning process

Review what you learned, where you struggled, and which methods were effective.

Example: After resolving a server problem, record the symptoms, diagnostic steps, root cause, and prevention measures.

21

Transfer knowledge to unfamiliar situations

Apply principles from one context to a new problem, while checking whether the analogy actually holds.

Example: Use general fault-isolation principles learned from networking to structure solar system troubleshooting.

22

Continue improving through feedback

Use results, testing, critique, and new evidence to refine your knowledge and solutions.

Example: Review your backup and disaster recovery design after a test restore, then improve any weak points you discover.

3. Bloom's Taxonomy applied to a real-world project

Let's apply the six pillars to a project relevant to your technical interests:

Project: Build a reliable, remotely accessible Home Assistant solar monitoring system.

Learning progression

1. Remember
   Learn the basic terminology: PVS5, microinverter, LAN, API, Docker, HAOS, IP address.
2. Understand
   Explain how data moves from the solar monitoring controller to Home Assistant.
3. Apply

Install HAOS, configure networking, and add the appropriate integration.

4. Analyze
   Investigate missing data, HTTP errors, network connectivity, and device-specific failures.
5. Evaluate
   Assess the reliability and security of the monitoring design against your remote-management requirements.
6. Create
   Build a documented monitoring system with a dashboard, alerting, and a recovery plan.

The important distinction is that successfully following installation instructions does not necessarily mean you understand the system. Higher-order learning involves being able to diagnose, adapt, justify, and design.

4. How to use Bloom's Taxonomy for self-directed learning

You can use Bloom's framework to turn almost any topic into a structured learning cycle.

Build a learning plan

Choose a topic to see an example progression through all six cognitive levels.

Learning topicHome Assistant

1

Remember

List the main HAOS components, integrations, and networking terms.

2

Understand

Explain how HAOS communicates with devices on the local network.

3

Apply

Install an integration and configure a sensor.

4

Analyze

Investigate a missing sensor or connection failure.

5

Evaluate

Assess integration reliability, security, and maintainability.

6

Create

Design a documented HAOS monitoring and backup system.

Expand this learning plan

5. A practical daily learning routine

If you want to use Bloom's Taxonomy as a personal learning framework, you can structure a session around the following questions.

Stage	Question to ask yourself
Remember	What facts do I need to recall?
Understand	Can I explain this in my own words?
Apply	Can I use this knowledge in practice?
Analyze	What are the components, relationships, and possible causes?
Evaluate	What evidence supports my conclusion, and what criteria am I using?
Create	What can I build, design, or improve with what I learned?

You don't need to complete all six levels every day. A short learning session might focus on understanding and application, while a larger project can extend into analysis, evaluation, and creation.

6. Key takeaway

Bloom's Taxonomy provides a way to measure the depth of your learning rather than merely the amount of information you consume.

The progression can be summarized as:

> Remember → Understand → Apply → Analyze → Evaluate → Create

For an independent learner, the ultimate goal is not to memorize everything. It is to develop the ability to understand principles, use them effectively, reason through unfamiliar problems, evaluate evidence, and create useful solutions.

Learning becomes more powerful when you can move from knowing something to doing something with it.