

Rating Metrics

Hack For Humanity 2025

Each metric is rated on a 1–5 scale.

1. **Cognitive load** - Estimates the difficulty and mental effort required

Question example: *How challenging was the course content to understand and apply?*

(1: Too Easy, 3: Balanced, 5: Overly Challenging)

Weight: Low (difficulty is important but subjective).

2. **Engagement & enjoyment** - Measures how captivating and enjoyable the course experience was

Question example: *How engaging or enjoyable were the course activities and teaching methods?*

(1: Very Poor, 5: Excellent)

Weight: Medium (student engagement is crucial for success).

3. **Usefulness & relevance** - Shows how well the course met expectations and provided valuable skills/knowledge

Question example: *How well did this course meet your expectations and provide useful knowledge or skills?*

(1: Poorly, 5: Extremely Well)

Weight: High (students want relevant, actionable outcomes).

4. **Course delivery and support** - Evaluates teaching quality and delivery of the course

Question example: *How would you rate the effectiveness of the teaching methods and the overall support provided during the course?*

(1: Very Poor, 5: Excellent)

Weight: Medium (a good instructor often makes or breaks a course).

The questionnaire should have an **open-ended review field**, where the student can write their experiences freely. This text would be displayed in the **review card**.

Overall Course Score Calculation - Analytic Hierarchy Process

Based on

<https://www.1000minds.com/decision-making/analytic-hierarchy-process-ahp>

The main idea of this metrics system is to evaluate and prioritize multiple alternatives based on a set of criteria.

(The criterias would be Cognitive Load, Engagement & Enjoyment, etc.)

We'd compare the pairs of criteria, asking how much more important one is over another, using a numerical scale (1 to 9) → **pairwise comparison matrix**

The pairwise comparison matrix is used to calculate a priority vector (weights), which represents the relative importance of each criteria.

	Cognitive Load	Engagement & Enjoyment	Usefulness & Relevance	Course Delivery and Support
Cognitive Load	1	1/3	1/5	1/4
Engagement & Enjoyment	3	1	1/3	1
Usefulness & Relevance	5	3	1	3
Course Delivery and Support	4	1	1/3	1

Why these values:

Cognitive Load vs. Engagement & Enjoyment:

Balanced engagement is moderately more important than overly high or low cognitive load. Let's rate **Engagement & Enjoyment** as moderately more important (3).

Cognitive Load vs. Usefulness & Relevance:

Usefulness is significantly more critical than cognitive load for success. We'll assign **Usefulness & Relevance** a strong importance (5).

Cognitive Load vs. Course Delivery & Support:

Clear course delivery is vital to make high cognitive loads manageable. Let's rate **Course Delivery & Support** as moderately to strong more important (4).

Engagement & Enjoyment vs. Usefulness & Relevance:

Usefulness generally outweighs enjoyment, but they are interrelated. Assign **Usefulness & Relevance** as moderately more important (3).

Engagement & Enjoyment vs. Course Delivery & Support:

Good delivery ensures engagement. We'll assign **Course Delivery & Support** as equally important (1).

Usefulness & Relevance vs. Course Delivery & Support:

Usefulness is slightly more critical since even excellent delivery won't compensate for irrelevant content. Assign **Usefulness & Relevance** a moderately more important (3).

The formula:

Multiply each number in each row by the corresponding number in the *column* and sum the products.

(Cognitive Load row's first number x cognitive load column's first number + cognitive load row's second number x cognitive load column's second number...)

When this has been done to all of the rows & columns, sum the rows (Row Total). Sum also the Row Total's values (Sum). The weights are calculated by dividing the row total with the sum (e.g., 127,9724.../1768,93166...)

	Cognitive Load	Engagement & Enjoyment	Usefulness & Relevance	Course Delivery and Support	Row Total	
Cognitive Load	70,277778	24,685185	9,762222	23,247222	127,972407	7,23 %
Engagement & Enjoyment	190,433333	67,011111	26,433185	63,122222	347,051852	19,62 %
Usefulness & Relevance	502,277778	176,766667	69,944444	166,433333	915,422222	51,75 %
Course Delivery and Support	207,688889	73,077778	28,862963	68,855556	378,485185	21,40 %
				Sum:	1768,9316667	

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Weight Distribution

According to this iterative process, the weights would be:

Usefulness & relevance

52%

Course delivery & support

21%

Engagement & Enjoyment

20%

Cognitive Load

7%

Score Calculations

The subscores would be counted with the following formula:

Points given x weight

Example

Reviewer gives the following scores:

Cognitive Load: ★★★★★☆ (4.0)

Engagement & Enjoyment: ★★☆☆☆ (2.0)

Usefulness & Relevance: ★★★★★☆ (3.5)

Course Delivery & Support: ★★★★★☆ (4.2)

$$\begin{array}{l} \text{Cognitive Load} \\ 4 \times 0.07 = 0.28 \end{array}$$

$$\begin{array}{l} \text{Engagement \& Enjoyment} \\ 2 \times 0.2 = 0.4 \end{array}$$

$$\begin{array}{l} \text{Usefulness \& Relevance} \\ 3.5 \times 0.52 = 1.82 \end{array}$$

$$\begin{array}{l} \text{Course Delivery \& Support} \\ 4.2 \times 0.21 = 0.882 \end{array}$$

Overall score: 3.4