

L2 Critical Thinking

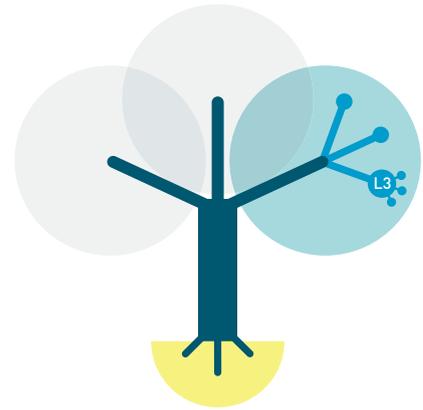
The assessment of information and arguments to support reasoned conclusions and develop innovative solutions

Critical thinking is a higher-order thinking skill that is crucial to cope with uncertainty, complexity, and change. It is tightly interwoven with **L3 (Managing Learning)** and a “mindful agency”, which involve managing the process of learning, the feelings associated with a challenge, and agency in taking responsibility in the learning process³⁴. Critical thinking entails a **self-directed, skilful analysis of information**, beliefs or knowledge, with an ongoing reconstruction of one’s thinking¹⁵⁰, knowledge about methods to assess and produce new knowledge and strategies to solve problems. It assumes awareness of the egocentric and sociocentric tendencies of human thinking that may produce flaws in the quality of reasoning, as well as willingness to **critically assess and evaluate information**. Critical thinkers endeavour to develop intellectual virtues such as intellectual integrity to recognise areas of inconsistency and contradiction in one’s thought, intellectual humility to recognise possible flaws in one’s own thinking, intellectual empathy to make genuine efforts to understand others’ perspective, and an intellectual sense of justice and confidence in reason. Critical thinking, thus, involves the awareness that personal values influence the process of comparing, evaluating and weighting different arguments³.

The amount of information available online in the so-called “post-truth” era, in which “objective facts are less influential in shaping public opinion

than appeals to emotion and personal beliefs”¹⁵¹ is reaching us almost limitlessly. It is therefore critical for citizens to be able to distinguish between real facts, propaganda, opinions, and rumors, and to be committed to **stopping the spread of misinformation**, inverting the trend that sees false news spreading online farther, faster, deeper, and more broadly than the truth¹⁵².

Perspectives on critical thinking increasingly take into account the relevance of both **divergent and convergent** thinking for its deployment¹⁵³.¹⁵⁴ Divergent, creative thinking is needed to generate new ideas, while convergent thinking is used to evaluate different options and provide the best possible answer to a problem or question. Convergent thinking thus involves evaluation, analysis, synthesis, and interpretation processes to provide a conclusion. It provides critical thinking with the “why” and “how” of choosing one idea¹⁵⁵. Critical thinking, just like creativity, is seen as a higher-order skill crucially related to learning dispositions or attitudes to learning that can be taught or stimulated¹⁵⁶. In divergent thinking, the **playful exploration** of ideas, perspectives and pathways requires affective and cognitive resources to scaffold engagement with the unknown¹⁵⁷. A critical thinker requires self-regulation of thought and judgment, and willingness to assess and evaluate information critically¹⁵⁵.



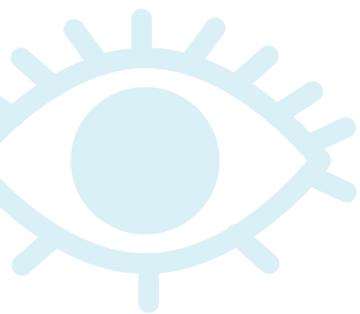
L2.1

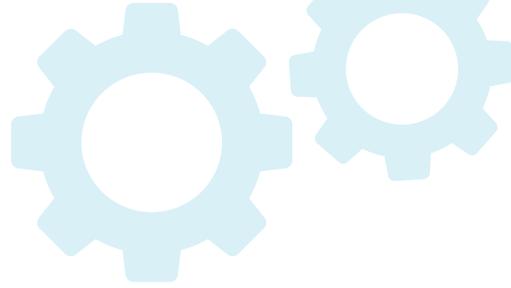
Awareness of potential biases in the data and one's personal limitations, while collecting valid and reliable information and ideas from diverse and reputable sources

Individuals need to be aware of the possibility of dealing with misinformation and willing to fact-check a piece of information and evaluate the credibility of a source

This descriptor stresses the relevance for a critical thinker of being **aware** of the **limitations** and biases in one's knowledge. For instance, the confirmation bias, the tendency to favour ideas that confirm our existing beliefs¹⁰⁷; the availability bias, the tendency to judge the probability of an event based on how easily an example of those event comes to mind¹⁵⁸, or the belief bias, the tendency to evaluate the logical strength of an argument based on the believability of its conclusions, are some of the cognitive biases that may hinder our capacity to assessing information correctly.

Moreover, in the contemporary situation in which online information may lack gatekeepers, it is important that individuals are aware of the possibility of dealing with **misinformation** and are **willing to fact-check** a piece of information and **evaluate the credibility** of a source by assessing its accuracy, reliability and authority, while preferring primary sources over secondary sources of information where possible.





L2.2

Comparing, analysing, assessing, and synthesising data, information, ideas, and media messages in order to draw logical conclusions

Deploying critical thinking requires testing the robustness of arguments and thoughts to identify possible biases

In the digital society we are drenched by data. This descriptor stresses the relevance of **making sense of data** more than accumulating it. This requires open-mindedness and willingness to assess information, ideas and media messages in a critical way¹⁵⁵. Critical thinkers need to assess situations and assumptions, ask questions and evaluate whether an argument makes sense or not¹⁴⁷.

Deploying critical thinking therefore requires **testing the robustness of arguments** and thoughts to identify possible biases. An argument should respond to standards of thinking involving clarity, credibility, accuracy, precision, relevance, depth, breadth, and significance¹⁵⁵. As indicated in the “**Digital Competence Framework for Citizens**”, individuals need to be able to analyse, compare and critically evaluate the credibility and reliability of both the sources of data, information and digital content, and of the data, information and digital content itself¹⁰³. A critical attitude helps individuals to tolerate ambiguity and to change their mind if new evidence arises¹⁵⁹.



L2.3

Developing creative ideas, synthesising and combining concepts and information from different sources in view of solving problems

Creativity enables individuals to question assumptions, re-evaluate problems considering different variables and to take sensible risks. Being persistent, collaborative, and disciplined sustain creativity

The capacity to think creatively is relevant to problem-solving. **Creativity** is a transversal skill that anyone can develop¹⁶⁰ to generate **outcomes** that are both **original and of value**, and is as well a driver for innovation¹⁶¹. To develop creativity, individuals need to use their imagination and intuition, adopting a playful attitude to explore new ideas and assess new strategies of problem-solving while accepting some levels of risk-taking³⁴. To accept the risk of failure linked with creativity, individuals need to feel both safety and stimulation¹⁶². Therefore, different situations may foster or limit individual creativity.

Creativity enables individuals to question assumptions, re-evaluate problems considering different variables and to take sensible risks¹⁶³. Creative characteristics within an individual may be considered as emerging from the capacity of **generating ideas** with fluency, flexibility, originality, and metaphorical thinking, taking stock of divergent thinking; **digging deeper into ideas**, analysing, synthesising, reorganising, and redefining, with the willingness to understand complexity, taking stock of critical thinking; **openness and courage to explore ideas**, with curiosity, playfulness, imagination, a sense of self-efficacy, tolerance for ambiguity and persistence; **listening to one's inner voice**, which requires self-awareness of and commitment towards one's own values and goals, ethical work, and the capacity to self-regulate own action¹⁶⁴. Being persistent, collaborative, and disciplined are nourishable "habits of minds" that sustain creativity¹⁶³.





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LifeComp

The European Framework for
Personal, Social and **Learning
to Learn** Key Competence

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