

Notes

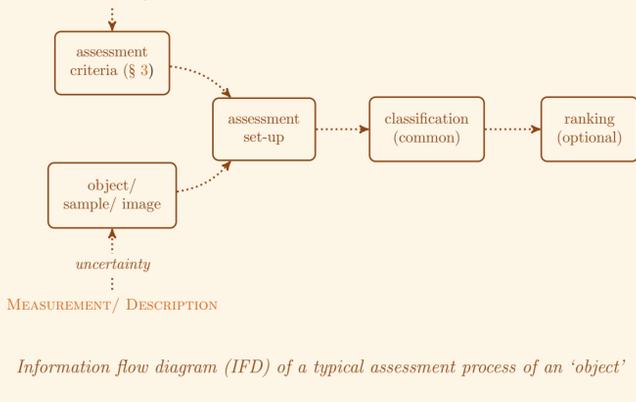
Assessment is the process — or, for some, merely the outcome — of making a value judgement (e.g. suitability, quality, sufficiency) about an object or situation in juxtaposition to agreed references known as *criteria* (from *κρίνειν* [Gk], to judge).

1 Concepts

- PURPOSE** An assessment must be oriented by the reason for its existence — for instance, to check on the learning progress of students (Perdicoulis, 2012b), ascertain the suitability of a candidate as a potential partner (Perdicoulis, 2016a,b), or to judge proposed development projects based on their forecast environmental impact (Perdicoulis, 2015b).
- CRITERIA** are selected references that mirror what is esteemed, appreciated, or sought after (e.g. principles, values, objectives). People’s sense of justice may warrant either *unique* criteria for each assessment, or *uniform* criteria across assessments.
- ASSESSORS** Whether assessing ‘simple’ or ‘complex’ entities or situations (Perdicoulis, 2013b), assessors must be *knowledgeable*, *reflected*, and *experienced*, as well as *impartial* (e.g. no conflict of interest with the assessed).
- DIRECTNESS** Assessors must seek *direct experience* with the entity or situation being assessed. In case of complex objects (Perdicoulis, 2013b), an appropriate description may be necessary (Perdicoulis, 2014b). *Proxy* alternatives such as *meta-information* (e.g. popularity) generally enfeeble the assessment (Perdicoulis, 2013a,b, 2015a).
- SAMPLING** When the object of the assessment is too large, it must be represented via appropriate sampling (e.g. progress reports). Related concerns are the *amount*, *frequency*, and/ or *size* of samples, their *directness* (e.g. avoiding proxies), and their *objectivity* (e.g. avoiding partial or biased sources).
- CALIBRATION** Models (e.g. numerical formulas, software) used for assessment purposes must be *accurate* (Perdicoulis, 2014b). Calibration involves a *sensitivity analysis* that correlates *standard* inputs — i.e. known samples, whether individually (e.g. ‘Z’) or in combinations (e.g. profiles, ‘Y’) — with their output readings, followed by necessary adjustments.
- PERSPECTIVE** Assessment criteria can be *internal* to the entity or situation to be assessed, such as the objectives or intended outcomes of a strategy or plan (Perdicoulis, 2014c), or *external*, such as community expectations (Perdicoulis, 2010, 2011a).
- REPORTING** The outcome of an assessment can be reported as *descriptive* (e.g. ‘the employee is on time most of the time’), *qualitative* (e.g. ‘satisfactory’), or *numerical* such as marks on linear scales (e.g. ‘five out of ten’), depending on the nature of the assessed entity or situation (Perdicoulis, 2013a,b).
- RANKING** Post-assessment operations such as *rankings* mark the *relative position* of an assessed entity or situation among its peers (e.g. ‘seventh out of forty’) and permit its *classification* (e.g. ‘top 5 percent’, or ‘A’ grade). Such signs of *performance* or *success* are particularly sensitive when assessing complex entities or situations (Perdicoulis, 2013b).

2 Process

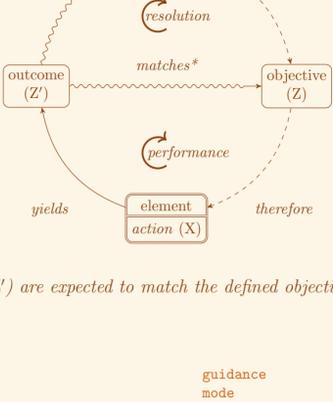
The objects to be assessed may be simple (e.g. a piece of glass) and may be measured in distinct dimensions (e.g. size, density, hardness, translucency), but in most cases they are complex due to dynamics — whether inherent or associated with their use (e.g. an engine, an employee, a confrontation). Complex objects may be *described* including their dynamics, computationally reduced to unidimensional or dimensionless *indices*, or decomposed to (apparently) unrelated *indicators* (Perdicoulis and Glasson, 2011).



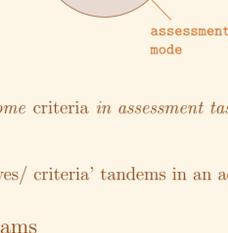
Information flow diagram (IFD) of a typical assessment process of an ‘object’

3 Criteria

The references used as ‘criteria’ in an assessment can be easily identified under planning conditions (e.g. when a strategy or action plan exists) as they coincide with the ‘objectives’ issued for guidance (Perdicoulis, 2014c).



Outcomes to be assessed (‘Z’) are expected to match the defined objectives (‘Z’) (Perdicoulis, 2014c)



The guiding objectives (‘Z’) become criteria in assessment tasks — two faces of the same coin

The following sets present ‘objectives/ criteria’ tandems in an academic context.

3.1 Documents/ Written exams

- STRUCTURE** Coherent succession of sections and paragraphs with relevant content
- SCIENTIFIC RIGOUR** (§ 6.1) Traceability; objectivity; accuracy; precision (Perdicoulis, 2012b)
- ARGUMENT** Coherence and clarity of statement; evidence, illustrations, examples
- FOCUS** Relevance to what is being asked

3.2 Presentations/ Oral exams

- RESPECT** Speak clearly for the agreed duration, in a sober tone and comfortable rhythm
- SCIENTIFIC RIGOUR** (§ 6.1) Traceability; objectivity; accuracy; precision (Perdicoulis, 2012b)
- ARGUMENT** Coherence and clarity of statement; evidence, illustrations, examples
- FOCUS** Relevance to what is being asked

3.3 Websites/ Blogs/ Technical videos

- TERMS** Appropriate for the intended concepts (*semantics*)
- PHRASES** Clear and unambiguous expressions (*syntax*)
- BLOCKS** Self-contained ‘sense units’ (*paragraphs, chapters*)
- OPUS** Coherent arrangement of the ‘sense units’ (*argument*)
- BONUS** Aesthetics/ style, technological/ artistic innovation

3.4 Technical/ Scientific posters

- COMPOSITION** Appropriate layout for easy navigation
- ARGUMENT** Coherence and clarity of statement; evidence, illustrations, examples
- TEXT** Scientific rigour (§ 6.1); legible at *ca.* 1m
- ILLUSTRATIONS** Integration with the text; legible at *ca.* 1m
- BONUS** Distinct artistic style

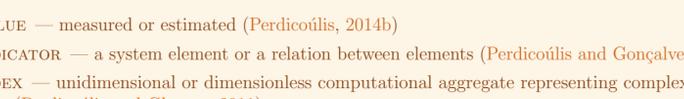
3.5 Research project proposals

- PROBLEM** Definition; importance in context (Perdicoulis, 2010, 2011b)
- HYPOTHESIS** Formulation; pathway of induction/ analysis
- BIBLIOGRAPHY** Relevance to the subject; coverage; appropriateness (Perdicoulis, 2012b)
- EXECUTION** Methodology; programming [e.g. tasks, time, HR] (Perdicoulis, 2011a)

3.6 Research units

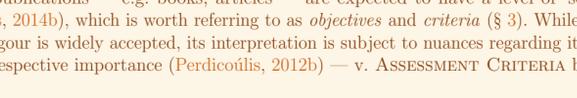
- OUTPUT** Originality, significance, and rigour (REF, 2012)
- IMPACT** Reach and significance on the economy, society, and/ or culture (REF, 2012)
- ENVIRONMENT** Vitality and sustainability (REF, 2012)

4 Expectations



Expectations increase with investment — i.e. ‘good’ does not always have the same meaning

5 Classification



Projecting a single indicator or index on a reference scale

- VALUE** — measured or estimated (Perdicoulis, 2014b)
- INDICATOR** — a system element or a relation between elements (Perdicoulis and Gonçalves, 2016)
- INDEX** — unidimensional or dimensionless computational aggregate representing complex entities (Perdicoulis and Glasson, 2011)

6 Numerical Examples

6.1 Scientific rigour

Scientific publications — e.g. books, articles — are expected to have a level of ‘scientific rigour’ (v. ASSESSMENT CRITERIA below), which is worth referring to as *objectives* and *criteria* (§ 3). While the concept of scientific rigour is widely accepted, its interpretation is subject to nuances regarding its exact content and their respective importance (Perdicoulis, 2012b) — v. ASSESSMENT CRITERIA below.

- REFERENCES**
 - Traceability — references (e.g. complete, unambiguous, relevant, necessary, valid): $W_1=20\%$
 - Objectivity — facts, assessments (e.g. unambiguous criteria, correct application): $W_2=20\%$
 - Accuracy — correctness (e.g. true values, ‘to the point’ argument, true context): $W_3=30\%$
 - Precision — coherence (e.g. measurements, methodology, procedure, argument): $W_4=30\%$
- ASSESSMENT CRITERIA**
 - N_i : Score at each criterion; $N_{i(max)} = \frac{5}{5}$
 - Demand level: Publication (i.e. not an early draft or an academic assignment)

$$\text{TOTAL SCORE} = \sum_{n=1}^4 N_i \cdot W_i$$

6.2 Student performance

Running the defined samples (e.g. reports, presentation) against a set of unambiguous criteria (v. ASSESSMENT CRITERIA below) will produce a set of partial assessments for the required level of demand (v. SPECIFICATIONS below). A total numerical score for the global assessment can be obtained by combining the partial numerical scores in a single equation (v. TOTAL SCORE below), which typically needs to be calibrated before use (§ 1).

- ASSESSMENT CRITERIA**
 - PC: Structure: $W_1=20\%$; Rigour: $W_2=30\%$; Argument: $W_3=30\%$; Focus: $W_4=20\%$
 - PP: Structure: $W_1=10\%$; Rigour: $W_2=40\%$; Argument: $W_3=30\%$; Focus: $W_4=25\%$
 - Presentations: Respect (time, people, rules), rigour, argument, focus: $W_{1,2,3,4}=25\%$
- SPECIFICATIONS**
 - N_i : Score at each criterion; $N_{i(max)} = \frac{5}{5}$
 - Demand level: Post-graduate/ 2nd Cycle (§ 4)

$$\text{TOTAL SCORE} = \underbrace{(0.1 \sum_{n=1}^4 N_i \cdot W_i)}_{\text{PC-report}} + \underbrace{0.1 \sum_{n=1}^4 N_i \cdot W_i}_{\text{PC-presentation}} + \underbrace{0.4 \sum_{n=1}^4 N_i \cdot W_i}_{\text{PP-report}} + \underbrace{0.4 \sum_{n=1}^4 N_i \cdot W_i}_{\text{PP-presentation}} \times 20$$

7 Objective Feedback

Assessment is not the only way to provide feedback to the authors or audience about a process or a product. Objective feedback can be conveyed elegantly through the identification of alternative options packaged in *scenarios* — for instance: *Identifying the presented method as ‘scenario A’, it is possible to create an alternative ‘scenario B’ with characteristics described in Table B.*

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