

Diagnostic Assessment

Category: Assessment, Feedback and Learning

Diagnostic assessment elicits targeted evidence about learners' prior knowledge, conceptions, strategies, strengths and needs in order to guide subsequent teaching or support. It may occur before a course, before a topic or whenever persistent difficulty requires closer examination. Its defining feature is explanatory and instructional use, not timing alone.

A baseline score becomes diagnostic only when evidence is sufficiently specific to support a plausible interpretation of thinking and an appropriate response. Because conclusions are provisional, educators should combine sources and avoid treating a diagnostic result as a permanent label ([Nichols, 1994](#)).

Diagnostic Cycle

1. **Define:** Specify the knowledge or reasoning that must be understood for a teaching decision.
2. **Elicit:** Use questions, explanations or performances that reveal thinking, not just correctness.
3. **Interpret:** Identify patterns, alternative conceptions, prerequisites and limits of the evidence.
4. **Respond:** Adjust explanation, grouping, pace, practice, resources or referral to support.
5. **Recheck:** Gather new evidence to determine whether the response addressed the diagnosed need.

Examples in Practice

Before a finance module, students explain how interest compounds in a short scenario. Incorrect answers are separated into arithmetic errors and conceptual misunderstandings, leading to different workshops; a follow-up problem checks whether each response worked.

Why It Matters

Diagnostic assessment supports efficient and inclusive teaching by distinguishing superficially similar difficulties. Its validity depends on a coherent account of cognition, well-designed evidence and an actionable link between the interpretation and the learning environment. Diagnostic tasks should be accessible and culturally responsive so that language, format or unfamiliar context is not mistaken for weak understanding ([National Research Council, 2001](#)).

Further Reading

6. Nichols, P. D. (1994). [A framework for developing cognitively diagnostic assessments](#). Review of Educational Research, 64(4), 575–603.
7. National Research Council. (2001). [Knowing what students know: The science and design of educational assessment](#). National Academies Press.
8. Heritage, M. (2010). [Formative assessment: Making it happen in the classroom](#). Corwin.

Related Terms: Formative Assessment | Prior Knowledge | Misconceptions | Learning Analytics