



Unlocking the potential of formative assessment with digital technology

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(on behalf of Lars van Boeijen)

Types of testing



Two types of testing in education:

- **Summative testing**
 - Evaluative
 - At the end of the instructional period
 - High-stakes
- **Formative testing**
 - Diagnostic
 - At the start and/or throughout the instructional period
 - Low-stakes



Testing effect



“The finding that taking a test on previously studied material leads to better retention than does restudying that material for an equivalent amount of time.”

APA Dictionary of Psychology

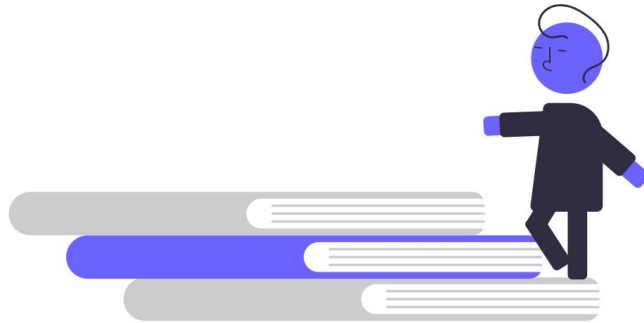
- Proved in hundreds of psychological experiments (Roediger & Karpicke, 2006; Wheeler & Roediger, 1992)
- Short answer quizzes are more beneficial than other types (McDaniel et al., 2007).

Benefits of formative testing



Formative testing has many proven benefits (Roediger et al., 2011):

- It enhances learning.
- It provides both students and teachers with regular progress reports.
- It incentivizes students to structure and spread out their learning.



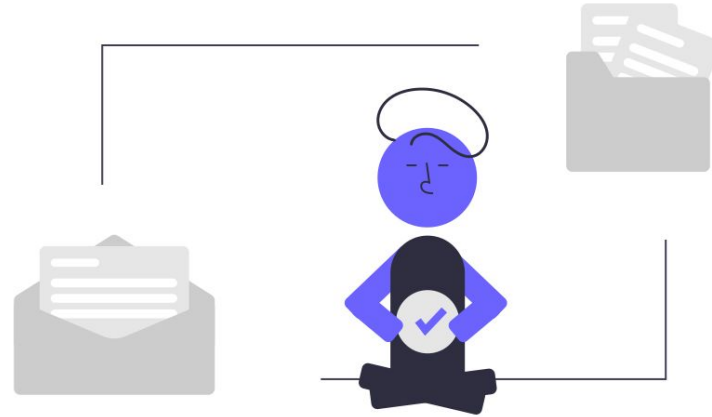
Practical obstacles



Formative testing remains a fairly underutilised learning and teaching strategy.

Practical obstacles:

- Amount of extra grading
- Limited classroom time



Digital technology and formative testing



Digital innovation is rapidly improving the feasibility of formative testing.

- **Constructing the test**
 - Question databases
 - Randomly generated exercises
- **Taking the test**
 - Easy scheduling
 - Remote testing capabilities
- **Grading the test**
 - Automated grading
 - Automatically generated progress reports



Example from a university partner



First-year mathematics course at the Erasmus University College (Rotterdam)

- 8 week course
- Each week: 1 lecture (2h), 1 practical (3h)
- Mid-term and final exam
- Two types of formative tests
- Compulsory, but performance does not affect grade in any way



Lecture

Practical



**Diagnostic
test**

**End-of-week
quiz**

Bolster Academy



Online learning & testing environment for STEM

- Engages students and saves teachers time
- Eindhoven University of Technology spin-off
- +10 years of experience
- +60 leading institutions
- +265,000 bolstered students



Algoma
UNIVERSITY



Erasmus



Online mathematics admission test

- Anytime and anywhere, safely proctored
- Co-developed with leading admission offices
- Trusted by more than 18 universities and 120 study programmes
- +4,500 international students



Demo

Time for a look behind the scenes!

References



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