

# Higher education teachers' knowledge about effective instructional strategies: What do they know?



**Aim:** supporting higher education teachers in evidence-based teaching → Evidence-based teaching helps students to learn more effectively → HE teachers seem insufficiently familiar with existing evidence for effective learning and teaching → No clear insights into what teachers do and do not know, believe, and apply → Focus on teachers' knowledge, beliefs, skills



Effective instructional strategies: strategies that teachers use in their teaching to elicit active cognitive processing in students. → To teach effectively, teachers should understand how human information processing and learning works. → Information processing and learning are extensively studied in (educational) cognitive psychology. → Within the field of cognitive psychology, there are several prominent cognitive learning theories, we concentrate on three frameworks that address the complete process of information processing (human cognitive infrastructure) and learning.

- 1 Cognitive load theory** focuses on students' cognitive capacity and how instructional design can optimize learning by managing cognitive load. CLT is widely accepted as fundamental theory of instructional design (e.g., worked example effect, redundancy effect).
- 2 Cognitive theory of multimedia learning:** "people learn more deeply from words and pictures than from words alone". Builds strongly on CLT and incorporates several other cognitive learning theories (e.g., multistore model of memory and dual coding theory) and can be seen as another fundamental theory (e.g., cueing, mapping, coherence principle).
- 3 Desirable difficulties framework** focuses on how students learn effectively (learning vs performance), based on assumptions from cognitive psychology which can be translated into principles for effective instruction (e.g., spaced practice, retrieval practice).

These three frameworks have led to many evidence-based cognitive principles for effective instruction.



However, which (sets of) principles have sufficient empirical support in the context of *higher education*?  
**RQ 1: What are evidence-based cognitive principles underlying effective instruction in the context of higher education according to literature?**



**Literature review**  
Resulting in selection of cognitive principles that have sufficient empirical support in HE.

Selection can be used as input for a professional development program to improve HE teachers' instruction, and ultimately benefit student learning. This program will be developed in later studies.

Before we can improve HE teachers' instruction, it is useful to understand which of these cognitive principles teachers know, what their beliefs are about these principles, and to what extent teachers apply these principles in daily practice.

A baseline measurement is needed to understand what support teachers need. This leads to **RQ 2: How can higher education teachers' knowledge, beliefs, and application of these evidence-based cognitive principles be measured?**



## Your thoughts?

- Do you recognize that (higher education) teachers may lack sufficient knowledge about effective instructional strategies and the skills to apply them? What are causes?
- What does your institution do to improve higher education teachers' knowledge and application of effective instructional strategies, what are good practices and what aspects could be further improved or should be avoided?

