



Medical and Health Professional Education  
Best Evidence Medical Education

## **BEME Spotlight 53**

### **Cognitive load theory for training health professionals in the workplace: A BEME review of studies among diverse professions: BEME Guide No. 53**

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#### **Review citation**

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#### **Review website**

<https://bemecollaboration.org/Published+Reviews/BEME+Guide+No+53/>

#### **Keywords**

Cognitive load theory, workplace learning

#### **Headline conclusions**

Studies support the relevance of cognitive load theory to workplace teaching and learning within the health professions, where aspects of the environment and task complexity place learners (particularly early learners) at substantial risk of cognitive overload; this can negatively impact learning and performance. Studies from non-health professions complement and support studies within the health professions. Included studies inform two primary debates related to cognitive load theory: how to measure cognitive load and how to conceptualize germane cognitive load. Theoretical and practical implications are provided.

#### **Background and context**

Cognitive load theory is a cognitive learning theory focused on limitations of the working memory that is considered highly relevant to health professions education. As it is particularly well-suited for complex learning settings, cognitive load theory seems an ideal theoretical lens for considering workplace learning in the health professions, yet how cognitive load theory should practically inform workplace teaching and learning remains unclear. Additionally, theoretical implications of using cognitive load theory to study professional workplace training are unknown.

## Review objectives

We sought to address three primary research questions:

- 1) How do studies leveraging concepts of cognitive load theory to study professional workplace teaching and learning inform, contribute to, or conflict with, theoretical tenets of cognitive load theory?
- 2) What practical implications for workplace teaching, curricular design, and educational research in the health professions can be drawn from studies of cognitive load theory?
- 3) How can studies of cognitive load theory in non-health professional workplace settings inform workplace teaching within the health professions?

## Review methodology

**Search Strategy:** Systematic search of 8 databases including health and non-health professions: PubMed, PsycINFO, ERIC, CINAHL, Scopus, Web of Science, Google Scholar, IEEE Xplore Digital Library

### Inclusion Criteria:

1. Study uses cognitive load theory or measures cognitive load
2. Study is an educational research study designed to assess process or outcomes of learning
3. Study is performed in a professional workplace setting, either partial (e.g., simulated) or actual

**Data Synthesis:** Scoping review methodology using six-step process described by Arksey and O'Malley

## Implications for practice

Workplace teachers can take evidence-based steps to optimize cognitive load (match intrinsic load to the learner's level, minimize extraneous load, and promote germane load) among health professions workplace learners throughf curriculum design, direct teaching, learning environment and learner metacognition.

## References

- Young JQ, Van Merriënboer J, Durning S, Ten Cate O. 2014. Cognitive Load Theory: implications for medical education: AMEE Guide No. 86. *Med Teach.* 36(5):371-384.
- Arksey H, O'Malley L. 2005. Scoping studies: towards a methodological framework. *Int J Soc Res Method.* 8(1):19-32.