Chapter 7
Meaning Equivalence Reusable Learning Objects (MERLO)

ABSTRACT

In the chapter we discuss Meaning Equivalence Reusable Learning Objects (MERLO), a multi-dimensional database that allow sorting and mapping of important concepts in a given knowledge domain through multi-semiotic representations in multiple sign systems, including: exemplary target statements of particular conceptual situations, and relevant other statements. MERLO pedagogy guides sequential teaching/learning episodes in a course by focusing learners' attention on meaning. The format of MERLO assessment item allow the instructor to assess deep comprehension of conceptual content by eliciting responses that signal learners' ability to recognize, and to produce, multiple representations, in multiple sign-systems - namely, multi-semiotic - that share equivalence-of-meaning. Exposure of scholars and learners to multi-semiotic inductive questions enhance cognitive control of inter-hemispheric attentional processing and enhance higher-order thinking. It highlights the important role of representational competence in scholarship, teaching and learning.

INTRODUCTION

Boundary-of-Meaning (BoM) of a Target Statement (TS) is a good measure of the depth of understanding in a given knowledge domain. It documents the results of comparing TS to other representations by two different criteria:

- Surface Similarity (SS) to the Target Statement.
- Meaning Equivalence (ME) with the Target Statement.

MERLO is a multi-dimensional database that allows the sorting and mapping of important concepts in a given knowledge domain through multi-semiotic representations in multiple sign systems, including: exemplary target statements of particular conceptual situations, and relevant other statements.

Figure 1 is a template for constructing an item family of MERLO assessment items anchored in a single target statement TS. Collectively, MERLO item families encode the conceptual mapping that covers the full content of a course - a particular content area within a discipline, for example 'calculus' in mathematics (Figure 2).

Figure 1. Template for constructing an item-family in MERLO
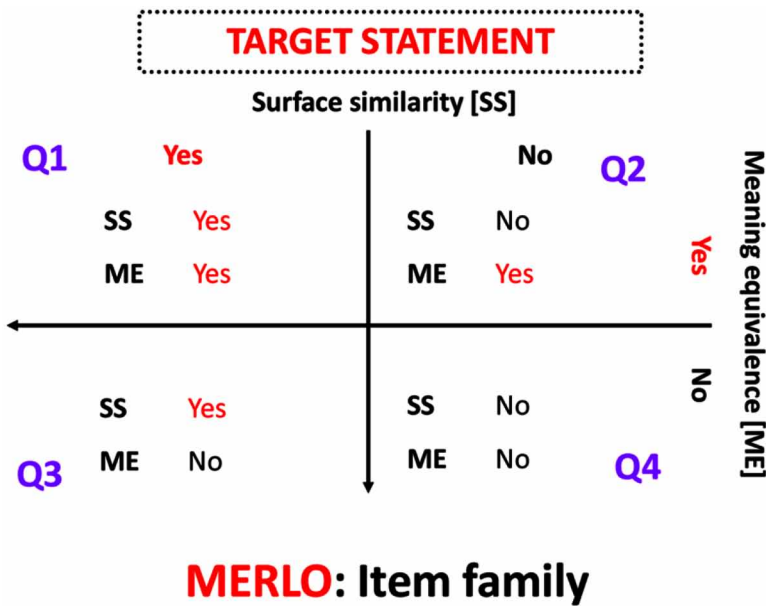
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