



**Multidisciplinary Perspectives on
Instructional Design and Technology
Across all Educational Levels**

Virtual Reality in vehicle painting:

Applying the Meaningful-immersive Virtual Reality (M-iVR-L) model

Miriam Mulders

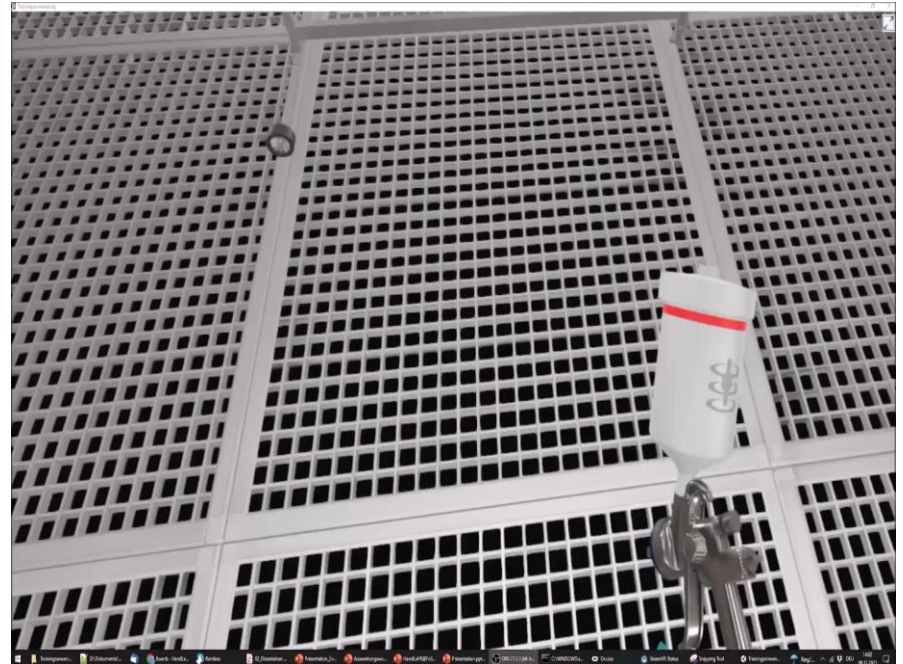
EARLI Sig 6 & 7 Meeting - 24.08.2022

Handle VR



GEFÖRDERT VOM

Bundesministerium
für Bildung
und Forschung





Reflexionswerkzeug

NutzerIn: Ausbildungsleiter

Lernaufgabe: Tutoriale 7 (Projekt)

Datum	Uhrzeit	Datum	Uhrzeit
30.03.2022	11:23:43	30.01.17	✗

Ausdrucken

Erfolgskriterien

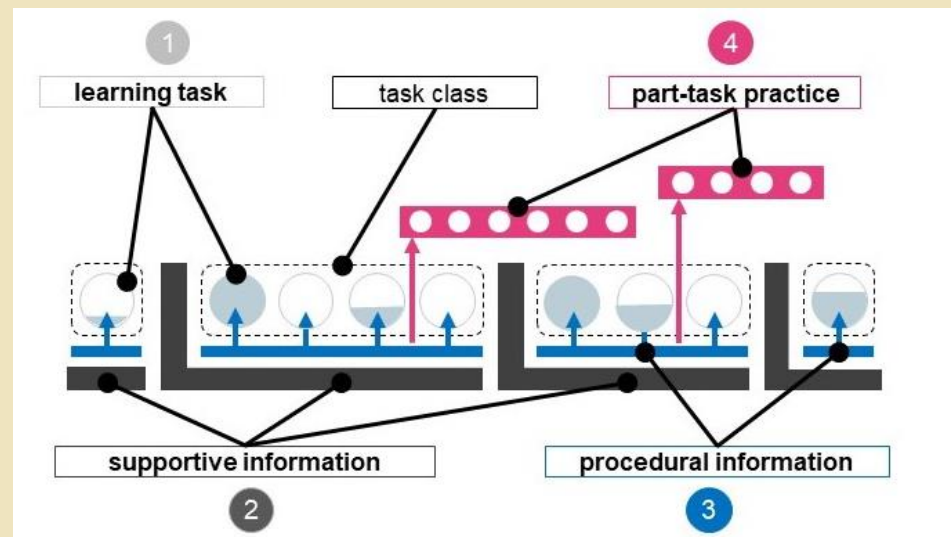
Abgleich der angegebenen Parameter:

☒ Gleichheitsbewertung von ähnlichen Dingen
 ☒ Werte von ähnlichen Dingen

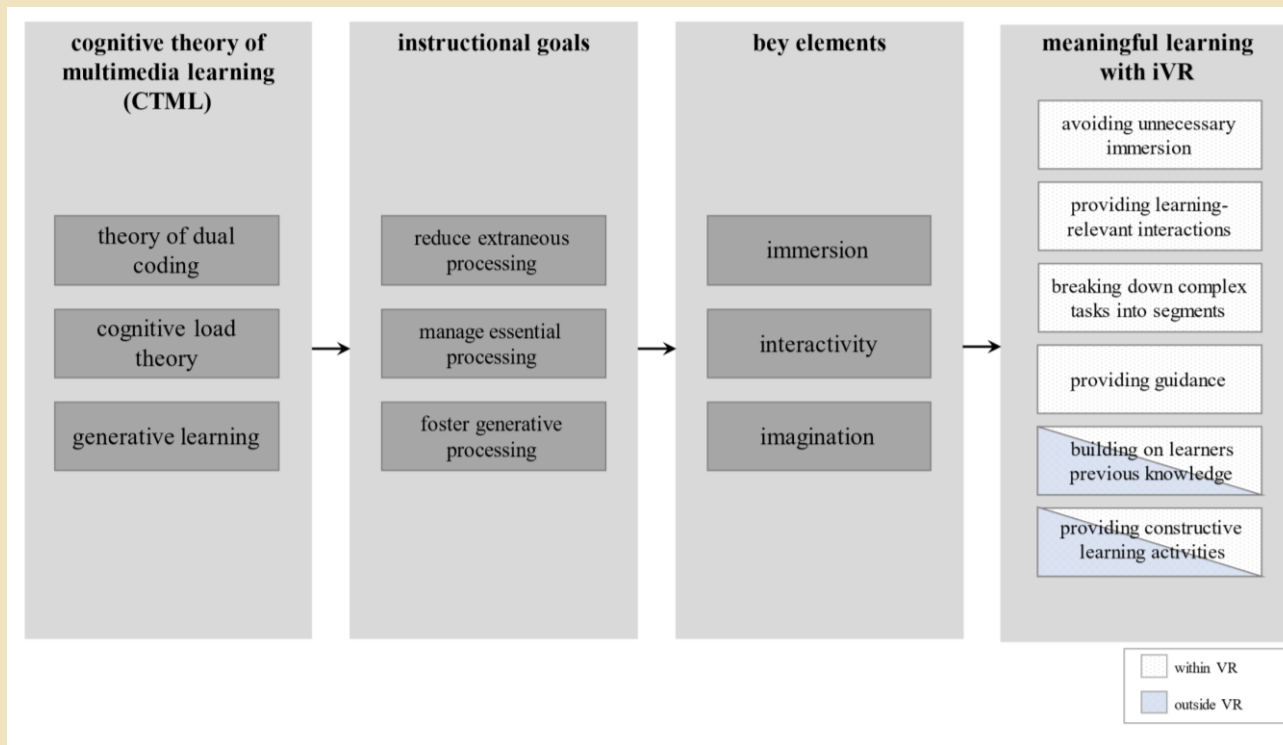
Aufgabenbereich	vermutet	Wahr ist (Bewertung)	anscheinend
Erkenntnis	Wahr von Größe Wert von ähnlichen Dingen	<div style="display: flex; justify-content: space-around;"> 100,00% 100,00% </div>	<div style="display: flex; justify-content: space-around;"> 100,00% 100,00% </div>
Verstehen (Bewertung)	Erkenntnis 10 von ähnlichen Dingen 10 von Größe Wert von ähnlichen Dingen	<div style="display: flex; justify-content: space-around;"> 100,00% 100,00% </div>	<div style="display: flex; justify-content: space-around;"> 100,00% 100,00% </div>
Ausgangspunkt (Bewertung)	Erkenntnis 10 von ähnlichen Dingen 10 von Größe Wert von ähnlichen Dingen	<div style="display: flex; justify-content: space-around;"> 100,00% 100,00% </div>	<div style="display: flex; justify-content: space-around;"> 100,00% 100,00% </div>
Ausgangspunkt	Erkenntnis 10 von ähnlichen Dingen 10 von Größe Wert von ähnlichen Dingen	<div style="display: flex; justify-content: space-around;"> 100,00% 100,00% </div>	<div style="display: flex; justify-content: space-around;"> 100,00% 100,00% </div>
Ausgangspunkt	Erkenntnis 10 von ähnlichen Dingen 10 von Größe Wert von ähnlichen Dingen	<div style="display: flex; justify-content: space-around;"> 100,00% 100,00% </div>	<div style="display: flex; justify-content: space-around;"> 100,00% 100,00% </div>







Instructional design process

- documents analyses & interviews
- learning and teaching goals
- 4C/ID model (van Merriënboer & Kirschner, 2018)



Applying the recommendations developed in the Meaningful-immersive VR-Learning model (M-iVR-L; Mulders, Buchner & Kerres, 2020) to the VR training application



-  **Learning first, immersion second:** highly detailed when needed (e.g., reflection) and less detailed when not needed (e.g., workbench)
-  **Provide learning relevant interactions:** video tutorial to train unknown interactions
-  **Segments complex tasks into smaller units:** structure of learning tasks, higher-level task classes, and additional practice scenarios
-  **Guide immersive learning:** virtual master, highlight relevant information
-  **Build on existing knowledge:** video tutorial, practice scenarios
-  **Provide constructive learning activities:** problem-oriented: customer orders

Both the M-iVR-L model (Mulders et al., 2020) and the 4C/ID model (van Merriénboer & Kirschner, 2018) were central to the instructional design of the VR learning application for vehicle painting trainees



empirical testings are needed to test the effectiveness of certain instructional elements (e.g., the tutorial, guidance through the master)

Mulders, M., Buchner, J., & Kerres, M. (2020). A framework for the use of immersive virtual reality in learning environments. *International Journal of Emerging Technologies in Learning (iJET)*, 15(24), 208-224.

Van Merriënboer, J. J. G., & Kirschner, P. A. (2018). *Ten steps to complex learning: A systematic approach to four-component instructional design* (Third edition). Routledge Taylor & Francis Group.