RG “Education for the digital world”
Weizenbaum Institute (Berlin) and Chair for Business Informatics, Processes and Systems (Potsdam)
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Topic(s) of Interest

HORIZON-CL2-2026-01-TRANSFO-05: Contribution of basic skills to productivity, innovation, competitiveness […]
HORIZON-CL2-2026-01-TRANSFO-07: Fostering competences for the green transition
HORIZON-CL2-2026-01-TRANSFO-10: Fostering cooperation and integration between SSH and STEM […]

Description of relevant research expertise

The research group (RG) **Education for the digital world** investigates competence development, teaching and learning in the context of digitalization, focusing on vocational and corporate training. The RG has three areas of expertise:

1. **Theory and didactic design**: The research integrates organizational, learning, and knowledge theory approaches to develop didactic approaches and models.
2. **Design of teaching and learning technologies and environments**: The theoretical and didactical concepts are used to design digital teaching and learning technologies (e.g., augmented and virtual reality and AI) in a way that is appropriate for target groups (e.g., older and experienced employees, students) following design science research principles. Empirical validation is carried out in field studies, experiments in teaching and learning environments, and through action research.
3. **Transfer**: Research findings are transferred into target group-oriented and evidence-based design guidelines. Frameworks and recommendations for action are derived for technology- and organization-related vocational and corporate training and continuing education. This also includes the design of teaching and learning technologies and environments.

Possible contribution to projects

The RG provides various teaching and learning laboratories that can be used for conducting experiments (e.g., measuring competence acquisition in a learning factory), projecting didactic ideas (e.g., acquiring skills for sustainable entrepreneurial activity), and serving as innovative learning environments (e.g., for conducting target group workshops). Each learning environment is based on a didactic model that has been implemented in workshops with students and employees.

The **Industrial Transformation Lab (InTraLab)** is a hybrid learning factory that enables the simulation of production and value creation processes. It supports low-threshold and target group-oriented communication of research results. Possible learning scenarios are: demonstrating the practical consequences of data breaches, visualizing the use of large language models in data processing, or showcasing digital technologies in digitally transformed work processes.

The fully equipped maker space **WI-Thinking-Lab** enables the learning of creativity techniques for different stakeholders.

The **WI-Brewing-Cellar** is a maker-oriented process lab where target groups can learn abstract knowledge (e.g., basics of scientific work or process modeling) using the craft process of “beer brewing.” The lab uses “Beer brewing” as a disruptive and well-known transfer medium to convey theoretical and abstract (methodological) knowledge in a hands-on manner.

The laboratories have international visibility through conference contributions and lectures, as well as a network of (inter-) national partners (e.g., DIHK). The **InTraLab** is a member of the **International Association of Learning Factories** and winner of the **Factory Innovation Award** in the “Continuing Education” category. The RG can contribute its laboratories to consortia as environments for experimentation and knowledge transfer and can also provide access to its international network.

Relevant projects

Title (Abb.)	Funding body	Funding Label	Duration
K4WiTrAI	DFG	559141885	01.07.2025 – 31.12.2027
Beer ´n science	BMFTR/StiL	3003-1498	01.04.2025 – 31.03.2027
API-KMU	BMFTR	02L19A010	01.10.2020 – 31.12.2022
EDUC+M	Erasmus+	2020-1-FR01-KA203-080593	01.09.2020 – 01.08.2023
CybPhyForg	DFG	317987159	01.04.2020 – 31.03.2023

Relevant publications

Gronau, Norbert, André Ullrich, and Malte Teichmann. 2017. ‘Development of the Industrial IoT Competences in the Areas of Organization, Process, and Interaction Based on the Learning Factory Concept’. *Procedia Manufacturing* 9:254–61. doi:doi.org/10.1016/j.promfg.2017.04.029.

Teichmann, Malte, Virginie Lettkemann, and Norbert Gronau. 2024. ‘Digitalization, Demographic Change and Decarbonization: Eight Pivotal Competencies for Learning Factories’. Pp. 313–20 in *Learning Factories of the Future. CFL 2024. Lecture Notes in Networks and Systems*. Vol. 1059. Cham: Springer Nature Switzerland.

Teichmann, Malte, Virginie Lettkemann, and Norbert Gronau. 2026. ‘Subject-Oriented Design Learning – An Interdisciplinary Learning Model for Design Education in Design-Oriented Learning Environments’. P. 5 in *[Accepted for pub]*. Japan, Tokyo.

Teichmann, Malte Rolf. 2025. ‘How to Design Immersive Virtual Learning Environments Based on Real-World Processes for the Edu-Metaverse – A Design Process Framework’. *IEEE Transactions on L. T.* 18:100–118. doi:10.1109/TLT.2025.3525949.

Teichmann, Malte, André Ullrich, and Norbert Gronau. 2019. ‘Subject-Oriented Learning - A New Perspective for Vocational Training in Learning Factories’. *Procedia Manufacturing* 31:72–78. doi:10.1016/j.promfg.2019.03.012.