

10. Inclusive Pedagogy and Didactics in Technical-Design Subjects

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Moderation: sought

In an increasingly technologized and digitalized world, technical-design school subjects are of central importance for social participation and personality development (Finkbeiner, 2023). A prerequisite for this is an inclusive pedagogy and didactics that enables all learners to actively participate. Given growing heterogeneity in prior experience, support needs, languages, interests and learning pathways, learning environments such as workshops, laboratories, studios, makerspaces and digital settings must be made accessible and didactically appropriate. At the same time, expectations are rising to implement educational equity and comply with legal and normative requirements on inclusion and accessibility. Alongside operational competence, process understanding, design thinking and responsible application are increasingly coming into focus. These combine orientation knowledge with practical capability for action.

From the perspective of ‘Generation Inclusion?’, we ask how learners and teachers in technical-design subjects understand themselves as subjects of inclusion, help shape their learning environments, and co-decide on goals, methods and assessments.

Inclusive pedagogy in technical-design subjects was long focused on approaches to and measures for dealing with disadvantage. Today, subject orientation, co-design and diversity-sensitive aspects are moving to the center. Given accelerating technological and social change, we understand inclusion in the future as a shaping practice: learners develop, test and take responsibility for solutions in realistic projects, using shared decision-making rights and multiple access points.

At the center of the Working Forum is the question of how teaching in technical-design subjects (e.g. technical design, crafts, design, maker education, etc.) can be planned and implemented so that all learners – regardless of their individual prerequisites, interests and support needs (Finkbeiner, 2024) – can participate actively and in a competence-oriented way. The focus is on didactic concepts that systematically break down barriers in learning environments, task designs, materials and assessments, in order to enable and expand opportunities for participation. Proven and innovative approaches to inclusive didactics for practical, workshop-oriented settings will be discussed, including adaptive task formats (Steinmann, 2022), project-based learning, cooperative learning forms, scaffolding and Universal Design for Learning, as well as material and tool handling, safety, spatial organization, and digital and analog design tools. Here, the role of the subject in the learning process is empirically underpinned in particular by learners assessing and reflecting on their individual learning success and competence gains in the areas of self-, social and subject-related competence (Steinmann, 2022).

The Working Forum understands learners, teachers and external partners as subjects of inclusion. Participation is extended beyond mere choice: learners help shape task formats and

assessment criteria, negotiate learning objectives, and thus themselves become initiators of adaptive learning formats.

The aim is to develop concrete design principles, quality criteria and implementation examples for teaching that combines subject-matter depth with accessibility (Steinmann, 2024). Possible examples include differentiated learning pathways, low-barrier documentation and presentation formats, and diversity-sensitive feedback and assessment practices.

Productive areas of tension are to be discussed, for example: subject-matter complexity vs. low-barrier access; safety vs. self-directed practice; standardization vs. individual learning pathways; analog materiality vs. digital tools/AI; resource scarcity vs. quality demands. The aim is to formulate design heuristics and criteria, rather than suggesting seemingly one-dimensional solutions.

A practice-oriented, research-informed exchange is expected, leading to recommendations for action, checklists or prototypes for learning environments. Participants are welcome to contribute brief practical experiences.

Particular attention will be given to two central aspects: the design of instructional design, and the conception of tasks and learning situations. Beyond this, the Working Forum is open to further aspects and questions raised by participants.

- How can core elements of inclusive didactics (e.g. choice, multiple perspectives, adaptation of complexity) be transferred to technical-design learning situations without diluting subject-matter rigor?
- How can learning opportunities be varied (in terms of access, products, processes) so that different performance levels, interests and support needs are taken into account, while still enabling shared learning experiences?

In this way, the Working Forum aims to contribute to making technical-design teaching future-oriented, participation-oriented and academically rigorous, and to contribute to networking research, teacher education and teaching practice beyond the event.

Literature:

- Finkbeiner, T. (2023). Vorstellungen zu(r) Technik: Eine rekonstruktive Studie technikbezogener Orientierungen von Lehrpersonen der Primarstufe (Dissertation, Pädagogische Hochschule Karlsruhe). <https://phka.bsz-bw.de/frontdoor/index/index/docId/596> urn:nbn:de:bsz:751-opus4-5969
- Finkbeiner, T. (2024). Perspektiven für ein gemeinsames Handeln von Schülerinnen und Schülern im technikbezogenen Unterricht. In M. Binder, M. Frieze, & I. Penning (Hrsg.), Teilhabe an gesellschaftlicher Transformation stärken: Der Beitrag der arbeitsbezogenen und der technischen Bildung (S. 185–199). wbv Publikation. <https://doi.org/10.3278/9783763976348>
- Steinmann, A. (2022). Herausfordernde Lernaufgaben und herausforderndes Verhalten. Förderungsorientierte Partizipation in technischen Gestaltungsprozessen des Primarbereichs. <https://nbn-resolving.de/urn:nbn:de:bsz:15-qucosa2-780437>
- Steinmann, A. (2024). Bildungsprozess Innovation, Fachdidaktische Entwicklungsforschung. Werkspuren, 175(3), 20.