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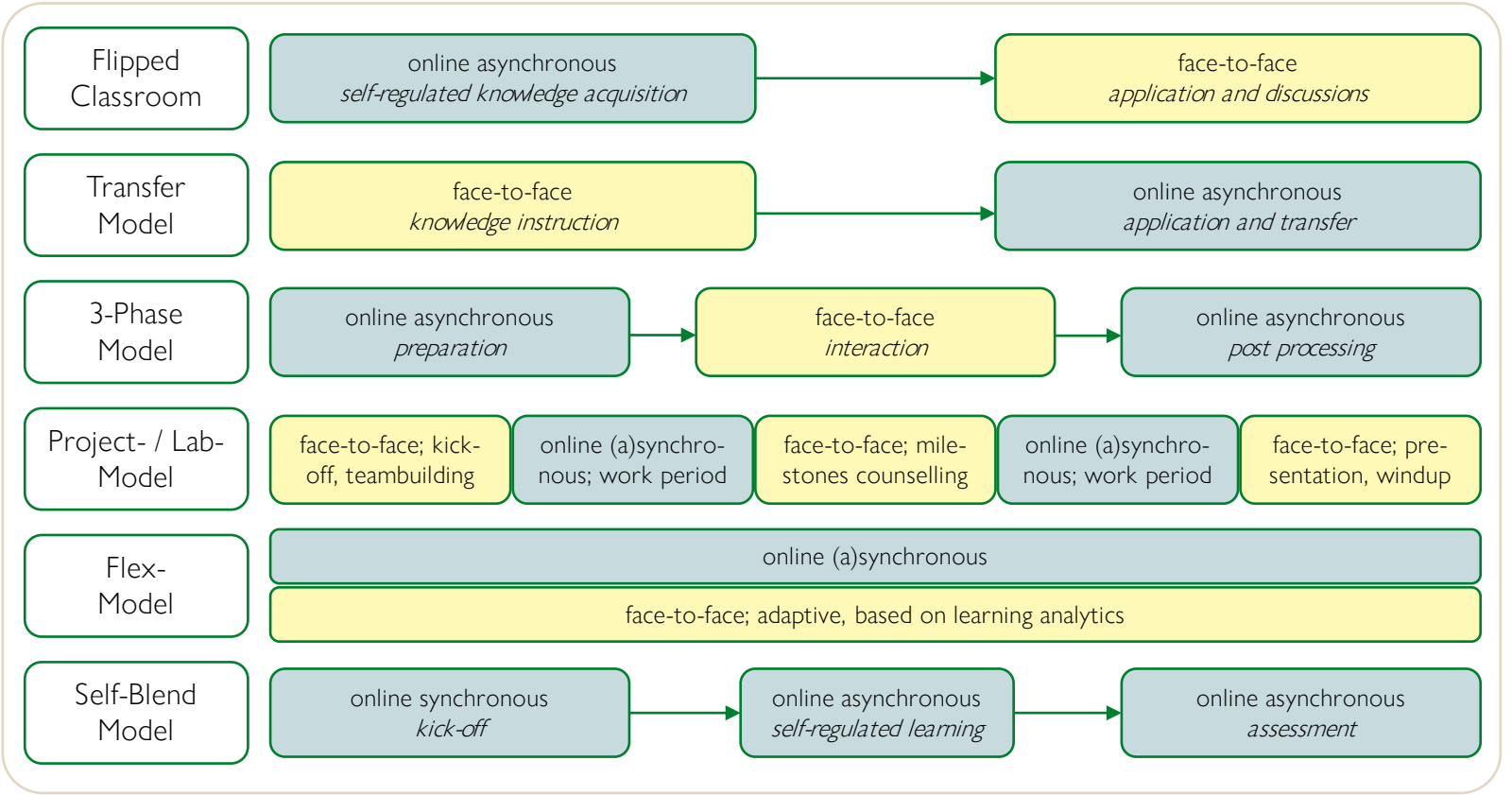
# Digitally Supported Teaching & Learning

Effectively integrating technology into teaching becomes more and more important. By leveraging digital tools, you can enhance student engagement and enrich the overall educational experience (Nkomo et al., 2021).

## Models of Blended-Learning

At the core of a blended learning approach is the idea of enabling students to engage intensively with a topic in different situations over a longer period of time. The figure below shows different models of blended learning (based on Seufert et al., 2019, p. 4-5).




### The most common blended learning models are:

Flipped classroom: Students work on course materials through self-study, for example with the help of online resources such as learning videos or textbooks. This creates space for interactive teaching formats in the subsequent face-to-face lectures, with the lecturer taking on the role of a coach to offer students individual support, leading problem-based learning phases or discussions.

Transfer Model: In transfer models, knowledge is acquired as part of a face-to-face session. The follow-up in the subsequent online phase is intended to strengthen the applicability of what has been learnt.

**When designing blended learning courses or course units, lecturers can reflect on:**

– How can the strength of face-to-face and online learning formats be best combined, given the course content and the larger instructional context?

– How do the different course/lecture phases help students to engage intensively and in a variety of ways with the learning materials?

## ICAP-Framework & the Choice of Digital Tools

Chi & Wylie (2014) distinguish four modes of cognitive engagement of learners: interactive, constructive, active and passive. The authors postulate that learning is more effective when learners move from passive to active, to constructive and finally to interactive behaviours.

Instructors can support the cognitive learning engagement of students through various digital learning opportunities, both in the online and face-to-face phases.
The table below shows selected examples, adapted from Seufert et al. (2011, p. 11ff.).

An overview of various tools for digital teaching support can be found on the HDZ homepage.

**Ideas for selecting tools based on the learning engagement**

| Learning Engagement | Digital Support for…* | Key Potential* |
|---|---|---|
| Passive<br>*absorbing learning content without external activity* | Transmission<br>*e.g. through learning videos*<br>Orientation<br>*e.g. through advanced organizer* | Scalable, able to address heterogeneous learning prerequisites and accepted by students.<br>Graphic presentation and breaking up of learning content to make it easier to understand. |
| Active<br>*organising or reproducing learning content* | Class Participation<br>*e.g. through voting systems*<br>Practicing Content<br>*e.g. through pre-structured workspace* | Activating students (especially in exercise sessions) with a wide range of applications.<br>Easier discussion and control of task fulfilment. |
| Constructive<br>*processing learning content beyond the information it contains* | Consolidation of Results<br>*e.g. through word processing*<br>Case Studies / Simulations<br>*e.g. through shared whiteboards* | Enables lecturers to quickly and efficiently keep an eye on (group) working processes and results, continue working with these outcomes or enter into a discussion about them.<br>Feedback and discussion on work results (e.g. a recorded presentation) with a peer can facilitate interactive and in-depth reflection processes (e.g. social video learning). |
| Interactive<br>*processing learning content by reacting to others' thinking* | Discussions<br>*e.g. through forums*<br>Collaborative Reflection<br>*e.g. through video annotations* | |

**) The listings provide examples and are not exhaustive.*

**To support the planning and implementation of digitally supported learning activities, educators can reflect on:**

- What is a suitable mix of the four learning activities (passive, active, constructive, interactive) for a given learning unit?
- What type of student engagement does a given learning medium address? How can I meaningfully support and enrich learning through (digital) media?
- What advantage does a digital tool offer over traditional media, given the learning objectives and content?

## Including AI-Tools in Teaching and Learning Processes

### Opportunities

- Personalised teaching and learning support
- Reduction of educators' workload by reducing repetitive tasks
- Creation of new learning environments
- High accessibility for students

### Pedagogical risks

- Blind trust can promote uncritical thinking
- Conceptual lack of understanding of the learning content on part of the tool / Large Language Model (LLM)
- Emotional lack of understanding of the students on part of the tool / LLM

### Recommendations, to be specified at course level

Promote a culture of critical thinking and active learning by addressing and integrating AI applications. On the one hand, the opportunities and risks of using AI must be discussed and negotiated together and, on the other hand, both lecturers and students need to build up expertise using AI applications.

Review your course elements with regard to the use of AI applications. In particular, this means using AI applications specifically in line with the learning objectives and checking the suitability of learning assessment.

## Conclusion

There is no such thing as *the* course design, *the* teaching/learning method or *the* digital tool. Instead, digital teaching/learning support must be adapted to the specific context. The teaching format must allow students to use the provided digital teaching/learning support in a way that promotes learning. Students need the necessary competences to use supportive instruments in a way that is conducive to learning without false incentives.


**Sources**

Chi, M. T. H., & Wylie, R. (2014). The ICAP Framework: Linking Cognitive Engagement to Active Learning Outcomes. *Educational Psychologist, 49*(4), 219–243. Link

Seufert, S., Meier, C., Rohr, V., Tarantini, E. (2019). *Blended Learning Designs für die HSG.* IWP-HSG.

Nkomo, L. M., Daniel, B. K., & Butson, R. J. (2021). Synthesis of student engagement with digital technologies: a systematic review of the literature. *International Journal of Educational Technology in Higher Education*, 18, 1-26.

**Further Resources**

Brame, C. (2013). *Flipping the classroom.* Vanderbilt University Center for Teaching. Link.

Chick, N. (2010). *Learning Styles.* Vanderbilt University Center for Teaching. Link.

Coley, M. (2023). *Teaching in the Age of AI.* Vanderbilt University Center for Teaching. Link.

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