1 Exploring your own learning paths – added value through digital tools

Independent learning can be enhanced with appropriate digital support. In their math lessons students work with tablets or smartphones and use the gesture-based software sketchometry, which is available online directly in the browser or as an app for different operating systems (https://sketchometry.org). The software is free of charge and can be used for free in schools and for private use. A major advantage is that learners can work with their own devices and are not dependent on equipment provided by schools.

The trademark of “traditional” teaching: The teacher teaches all students at the same pace, with the same material, using the same methods. The material is distributed with a watering can according to the “one size fits all” principle. Boredom for the high achievers and excessive demand for the low performers are often inevitable.

The concept of the sketchometry teaching modules enables the transition from passive-receptive teaching to active-discovering learning. The content is not presented as a “ready-made system”. In a construction phase learners first receive instructions on paper worksheets on how to construct objects and configurations with sketchometry. In the subsequent exploration phase work assignments are given that encourage learners to experiment and observe for themselves. They use their tablet or smartphone as an electronic sketchpad. The results are documented by hand (self-formulated texts, freehand sketches) on a structured result sheet or in a copybook. These notes are then compared and discussed in pairs. Finally, a discussion takes place in class under the moderation of the teacher.

Analog and digital “learning worlds” are linked together in this concept. However, it is by no means about bringing technology into the school for technology‘s sake. Digital learning tools such as tablets or smartphones and software should only be used if they can add value to previous teaching. Such added value can be achieved through

- increased and sustainable motivation,
- increased clarity through the possibility of dynamic modifications,
- understandable communication of complex issues,
- individualized learning processes,
- learning independent of time and place.