A short overview: Effective Learning with digital media

- **Learning environment**
- **Working Memory**
- **Long-term memory**

### Staying motivated and attentive

1. **Text processing**
2. **Image processing**
3. **Integrated knowledge structure**
4. **Monitoring oneself**
5. **Prior knowledge**

Prof. Dr. Tina Seufert, Leitung der Abteilung Lehr-Lernforschung, Institut für Psychologie und Pädagogik
<table>
<thead>
<tr>
<th>Which processes are involved?</th>
<th>Which challenges have to be overcome? How can teachers support these processes?</th>
<th>How can media thereby be used as support?</th>
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<td><strong>1</strong> Attention and selection</td>
<td>While learning, we often let ourselves be distracted. Attention can be drawn by an interesting task, important learning contents and <strong>transparent goals</strong>. The clearer the goals are formulated the easier it is for selection to successfully take place.</td>
<td>With media, issues can be presented diversely and multiple senses can be addressed simultaneously. Therefore, the attention of the learner can easily be drawn. For goal-oriented learning to really take place, well designed tasks for medial contents are needed.</td>
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<td><strong>2</strong> Text- and picture processing, Building an integrated knowledge structure</td>
<td>Learning materials often contain texts, pictures, tables, formulas etc. The learner needs strategies to connect and to understand the relation between these different multiple representations <strong>(coherence formation strategies)</strong>.</td>
<td>Learning with text and picture (multimedia effect) or eye and ear (modality effect) supports learning. Learning with animations also fosters the acquisition of knowledge of processes. Learning with multiple representations supports connected and abstract learning. However, cognitive overload must be avoided.</td>
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<td><strong>3</strong> Maintaining motivation and attention</td>
<td>Reading and listening over a long period of time is tiring and leads to a decrease in motivation and attention. The learning process needs a good rhythm where phases of receiving information and phases of processing information take turns. The learner thereby needs to be <strong>cognitively activated</strong>.</td>
<td>With a varied didactical concept, the information processing can be stimulated and even intensified. Media is particularly suitable for enabling interactive cooperation of the learner, as for example through clicker systems, exam simulation, flipped classroom....</td>
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<td><strong>4</strong> Metacognition / Reflection of the learning processes</td>
<td>To make the learning process ideal, learners have to plan their approach, they need strategies and they have to monitor themselves while learning so that they can adjust their strategies. This reflection of one’s own learning process is important in order to learn how to learn <strong>(metacognitive strategies)</strong>.</td>
<td>For instance, media can show the learner the current level of learning or the time required. Due to communication systems learners can exchange information about their approach, their strategies etc., which also serves reflection and regulation</td>
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<td><strong>5</strong> Connecting new knowledge with existing knowledge</td>
<td>In order to connect new with existing knowledge it is important to activate prior knowledge. In addition, abstract issues have to be concretized and structured learning, elaborated learning and <strong>cooperative learning</strong>, as for example, thinking out loud while learning, have to be promoted.</td>
<td>Media makes it possible to design simulations, augmented reality, experiments, mind maps, etc. and to verbally and graphically translate summaries in to other representations. So therefore, abstract contents become connected and concrete and one can remember them better.</td>
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Effective learning with digital media due to: transparent goals – cognitive activation – metacognition – cooperative learning

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Literatur


