



### The problem of the stipulation of the learning progress

- When can you speak of learning?  
→ differentiation of efficiency and learning
- Which possibilities of tests are there?  
→ differentiation of efficiency-, memory- and transfer tests
- How “big” is the learning progress?  
→ bottom- and ceiling effects

---

---

---

---

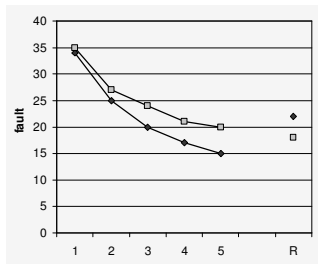
---

---

---

---

### How would you judge the following „learn curves“?



---

---

---

---

---

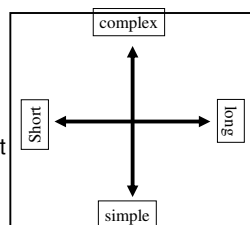
---

---

---

### Aspects of the learning situation

- Motor activity
- Situation of the accomplishment
- Point of time at the motor learning progress



---

---

---

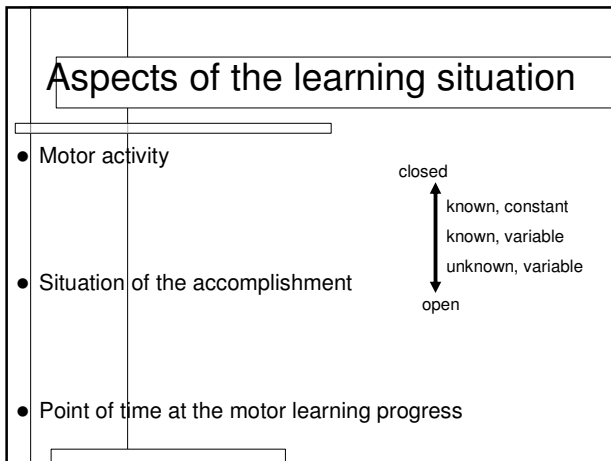
---

---

---

---

---




---

---

---

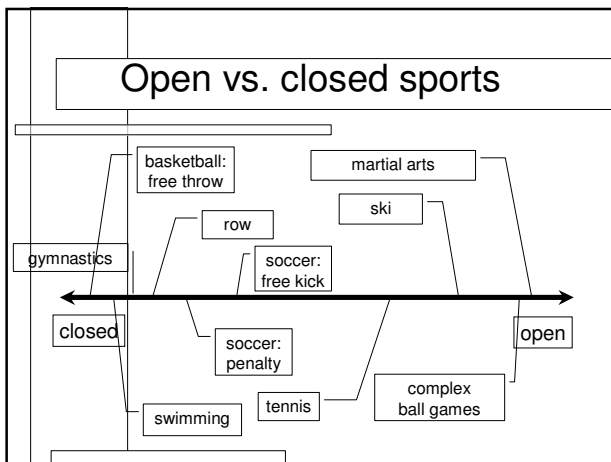
---

---

---

---

---




---

---

---

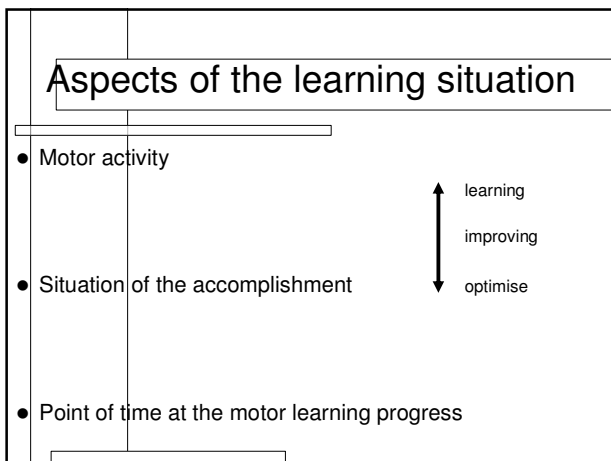
---

---

---

---

---




---

---

---

---

---

---

---

---

### Practice conditions

- The main factor: amount of practice
- Exercise spreading
  - (massed ↔ distributed)
- Exercise variability
  - (blocked ↔ random)
- Exercise modality
  - (movement ↔ mental)

---

---

---

---

---

---

---

---

### massed vs. distributed practice

Data of Stelmach (1969) during learning of the „Bachman ladder task“. The individual trials lasted in each case 30 seconds. Condition M without break, condition D in each case 30 seconds break. (from: Schmidt, 1988, S. 257)

---

---

---

---

---

---

---

---

### massed vs. distributed practice

Data of Stelmach (1969) during learning of the „Bachman ladder task“ with transfer test. (from: Schmidt, 1988, S. 259)

---

---

---

---

---

---

---

---

**Supporting strategies**

- Decrease of the movement length
- Decrease of the movement complexity
- Modification of the movement dynamic

---

---

---

---

---

---

---

---

**Decrease of the movement length**

- Main function phase
  - leads to success of the main aim of the movement
- Critical auxiliary function phase
  - prepares the main function phase, is necessary
- Free auxiliary function phase
  - Prepares the main function phase, is not necessary
- Transfer phase
  - Combines cyclical movements

---

---

---

---

---

---

---

---

**Decrease of the movement complexity**

Simplification strategies: decrease of the complexity by

- rhythm guidance
- visual orientation guidance
- Change of targets, size of movendum

---

---

---

---

---

---

---

---

## Change of the movement dynamic

Typical „excessive demand cases“:

- a very high execution speed
- a very short movement duration
- a very high power demand

---

---

---

---

---

---

---

---

## Summary + exercise

What are the main difficulties in the acquisition of the following sportive movements? Think of methodical procedures, which reduces these difficulties.

**Situation 1**

In physical education, shot-put ought to be learned.

**Situation 2**

Until today, a skier only drove on the slope and would now like to learn to ski in powder snow.

**Situation 3**

After completion of water acclimatisation, the crawl technique ought to be learned in the swim lesson.

---

---

---

---

---

---

---

---

## Definition

Mit Lernen wird ein Vorgang bezeichnet, der aufgrund der Aufnahme, Verarbeitung und Speicherung von Information zu relativ stabilen Änderungen im Verhaltenspotential einer Person führt.

*(Singer & Munzert, 2000, p. 247)*

Motor learning is a set of processes associated with practice or experience leading to relatively permanent changes in the capability for movement.

*(Schmidt & Lee 1999, S. 264)*

---

---

---

---

---

---

---

---

Aspects of the learning situation	
• Motor activity	
• Situation of the accomplishment	
• Point of time at the motor learning progress	

---

---

---

---

---

---

---