Learning, learning phases and implicit learning

- What is motor learning?
- Learn phases
- Implicit and explicit learning processes

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Name one example of a video use for a group of learners (school, experts, novices) and give reasons why you should use video in the context of your intended career!

Example: Clip of a basketball game through:

- **Reduce and structure information**
- **Direct attention, present movement techniques several times**
- **Use of slow motion and postures**
- **Connect video instructions with mental skill training**

because: **improvement of movement idea;**
improvement of movement perception

Motor learning – term determination

Motor learning is equivalent to the experiential dependent and relatively outlast change of competence, to achieve in certain situations a specific effect through a specific behaviour.

(Hossner & Künzell, 2003)

Motor Learning

Illustrate the following „parts of a determination“ of a definition of motor learning.

- **relatively outlast**
- **change**
- **competence**
- **experiential dependend**
- **specific behaviour**
- **motor**

Three- phase models
(e.g. Fitts & Posner, 1967; Anderson, 1982)

Cognitive Phase

⇩

Associative Phase

⇩

Autonomous Phase

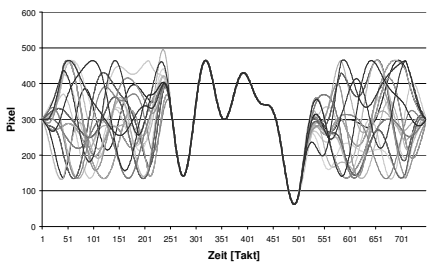
⇒ **„descent model“**

Critique of the descent model

“Neither you can generally say, that in the learning process the share of conscious allowance to the task is dropping at any rate, nor that necessarily a cognitive phase has to be passed through.

(Singer & Munzert, 2000)

The experiment of Pew (1974)



Results

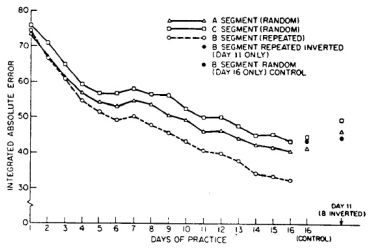


Figure of the results of the research of Pew (1974, p. 396)

Anecdotical Evidence for implicit learning

- **Baby's learn walk and articulation without anybody telling them explicitly how it works.**
- **Animals are able to learn movements**
- **Athletes often don't know, how they did a move, only, that it worked.**
- **Native speakers are able to speak in the right way, without knowing explicitly the grammar.**

Empirical Evidence for implicit learning

Laboratory experiments to learning

- **Pursuit tracking tasks (z.B. Pew, 1974; Hill & Raab, 2005)**
- **serial response time tasks (Nissen & Bullemer 1987)**
- **Golf-Putt (Masters, 1992)**
- **sport decision (Raab, 2003)**

Characteristics of implicit learning processes

- **Complex coherences in the environment are learned, but the rules are conscious for the learner.**
- **The learned rules can't be verbalized.**
- **People often learn without intend and without to perceive it.**
- **Implicit knowledge is very stable in mind (e.g. ride a bike)**

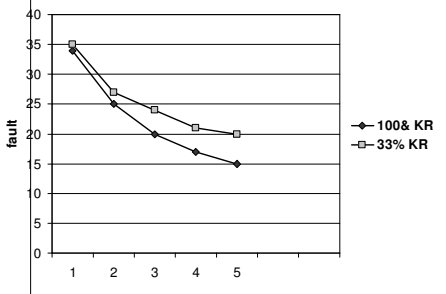
Summary + exercise

Under which conditions should implicit learning processes especially advantageous?

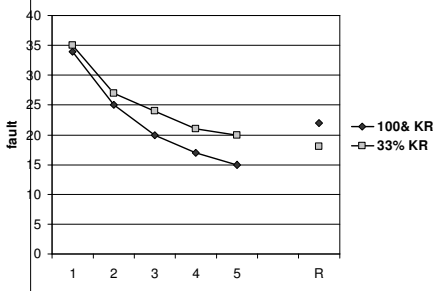
Name one concrete example for the composition of implicit learning processes in the context of your intended career!

Read chapter: Retention and Transfer (Schmidt & Lee, 2005, 452pp.)

Under which conditions has been learned more?



Learning curves – differentiation of efficiency- and learning effects



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

Aim- and part processes of the initial (cognitive) learning phase

Aim: composition of a "movement plan"
("getting the idea of the movement")

Part processes:
- visual perception processes
- attention focussing (on relevant criteria)
- movement idea (internal perception – realisation cycles)
- verbalisation processes (rhythm)
- Memory processes (outlast storage)

Aim- and part processes of the second (motor) learning

Aim: adaptation and differentiation of a “movement plan”

Closed skills

- amelioration and stabilisation
- Reducing of the execution variability
- Reducing of conscious control
- Optimization of the physical complex coordination

Open skills

- differentiation and flexibility of execution
- Improvement of option- and decision processes
- Perception of action relevant aspects
- Act under pressure

Phenomenal Learn phase characteristics (after Pöhlmann, 1986)

acquirement

- fast or accurately
- at times good
- efficiency fluctuation is characteristic
- movement sequence is non-efficient and stagnant
- no clear kinematical movement pattern
- high variability in series

perfecting

- fast and accurately
- expert is on average always better
- relative efficiency
- stability
  move seems “harmonious”, fluxionary; like “of a piece”; as entireness
- characteristic movement shape
- low variability