



**KLINIKUM**  
DER UNIVERSITÄT MÜNCHEN

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## Concept of the creation of Virtual Patients

Stefanie Kolb



## Learning objectives



“An objective is a description of a performance you want learners to be able to exhibit before you consider them competent. An objective describes an intended result of instruction, rather than the process of instruction itself.”

*Mager, R.*

- Increase learning success
- Extend memory
- Catalogue of learning objectives



- Objectives were conceptualized and used during WWII as a way to make teaching and learning more efficient.
- In the late 1950s and in the 1960s this approach was applied to the public schools.
- By the 1960s health profession schools were developing behavioral objectives.
- 1962: publication of *Preparing Instructional Objectives* by Robert F. Mager



- Learning objectives should have a **measurable verb**.
- Learning objectives should give a **specification** about what the learners are taught.
- Learning objectives should provide **criteria for success** and **competences** shall be defined.





- By knowing **where you intend to go**, you increase the chances of you and the learner ending up there
- Guides the teacher relative to the **planning of instruction, delivery of instruction and evaluation of student achievement.**
- Guides the learner; helps him/her focus and set priorities
- Allows for analysis in terms of the **levels of teaching and learning**



### 1st level

#### Knowledge Verbs

- Define
- Memorize
- List
- Recall
- Repeat
- Relate
- Name
- Repeat



### 2nd level

#### Comprehension Verbs

- Restate
- Discuss
- Describe
- Identify
- Locate
- Report
- Explain
- Express
- Recognize
- Review

## Choice of Verbs



### 3rd level

#### Application Verbs

- Translate
- Interpret
- Apply
- Practice
- Illustrate
- Operate
- Demonstrate
- Dramatize
- Sketch
- Employ
- Schedule
- Use



### 4th level

#### Analysis Verbs

- Distinguish
- Differentiate
- Appraise
- Analyze
- Calculate
- Criticize
- Compare
- Contrast
- Examine
- Test
- Relate
- Experiment

## Choice of Verbs



### 5th level

#### Synthesis Verbs

- Compose
- Plan
- Propose
- Design
- Assemble
- Create
- Prepare
- Formulate
- Organize
- Manage
- Construct
- Set-up



### 6th level

#### Evaluation Verbs

- Judge
- Appraise
- Evaluate
- Revise
- Score
- Select
- Measure
- Value
- Estimate
- Choose
- Compute
- Assess



- Consistent with the goals of the curriculum
- Clearly stated
- Clearly measurable
- Realistic and doable
- Appropriate for the level of the learner
- Worthy (Important stuff)



1. Defining topic, learning objectives, target group
2. Collecting and selecting material
3. Writing text, questions, answer- and expertcomments
4. Prepare and add **multimedia material**
5. **Review** of the virtual patient
6. Students get the case, give feedback
7. Adapting, updating the case





Examples for the creation of Virtual Patients

- **Clipp project**
- **Virtual University of Bavaria**
- **NeTWoRM**

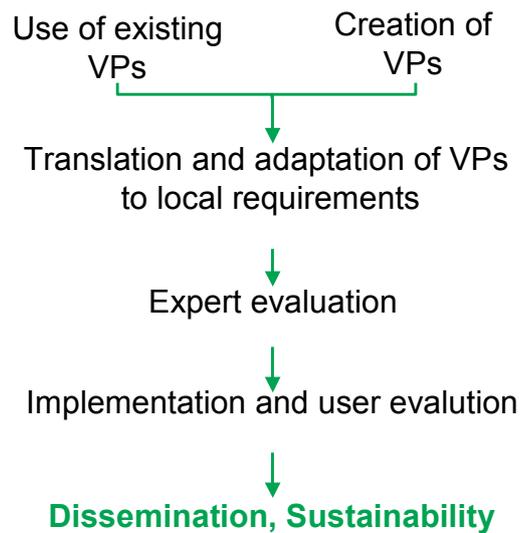


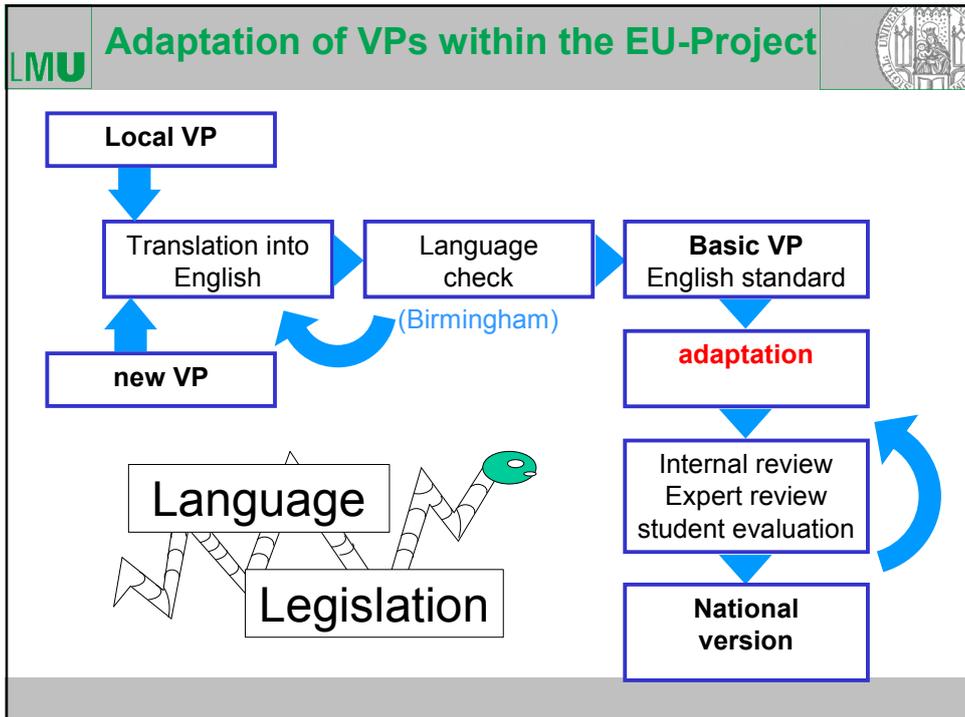
Computer-assisted Learning in Pediatrics Program

- 32 interactive virtual patients
- 110 universities involved
- Designed to encompass the learning objectives of the Council On Medical Student Education in Pediatrics (COMSEP) curriculum comprehensively
- Mostly used by third-year medical students
- Editorial Board (about 50 members)
  - Decisions about topics and learning objectives
- Author of the VPs: 1 to 2 members of the editorial board; 3 Reviewer



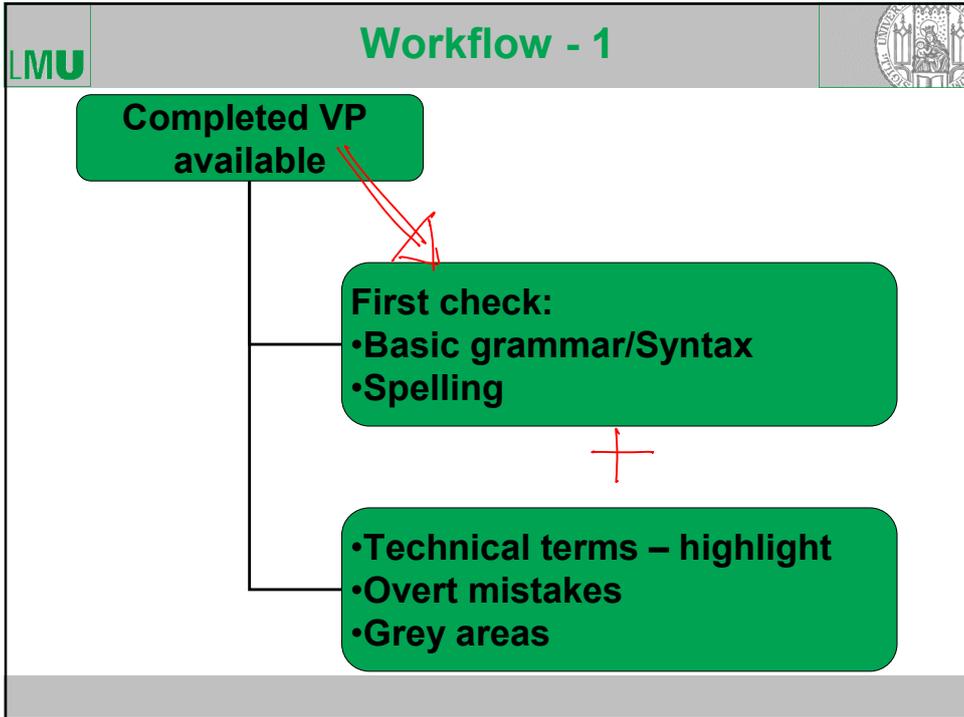
- Support and coordination of the development and implementation of multimedia learning elements at Bavarian universities
- Occupational medicine:
  - One author per Virtual patient
  - One internal reviewer
  - One external reviewer from another university
  - Implementation at the four Bavarian Universities is depending on the curriculum





**LMU**

**The original is unfaithful to the translation.**  
 Jorge Luis Borges



you are training to become a general practitioner in an average-sized city, Bravot

One day, your office door opens...

**Card 2/20: Your first impression**

A man in his mid-fifties enters your office. He is of average build, seems to be in good health and is not overweight

His name is Christian Dellert. He tells you that he has a skin alteration on his right forearm. He noticed it some time ago and it has grown ever since.

The lesion he shows you (Pic. 2) is about 5cm in diameter and has a bright yellow crust on the surface.

On being questioned, the patient tells you that the coating has been there for quite a while now.

Which aspects, apart from the acute symptoms, do you always have to consider during the dermatological history?

**Not Evaluated Freetext answer**

Family history, personal history (pets, plants, workplace) history of life (especially average sun exposure currently and during childhood, previous history of skin disease, exposure to toxins or irritants, chemicals, physical influences, leisure-time (holidays, hobbies), psychological stress, other (skin)diseases

**Answercomment:**

The causes of skin diseases are often not clear at first sight. Especially with regard to cancer, the underlying cause may have occurred a long time ago

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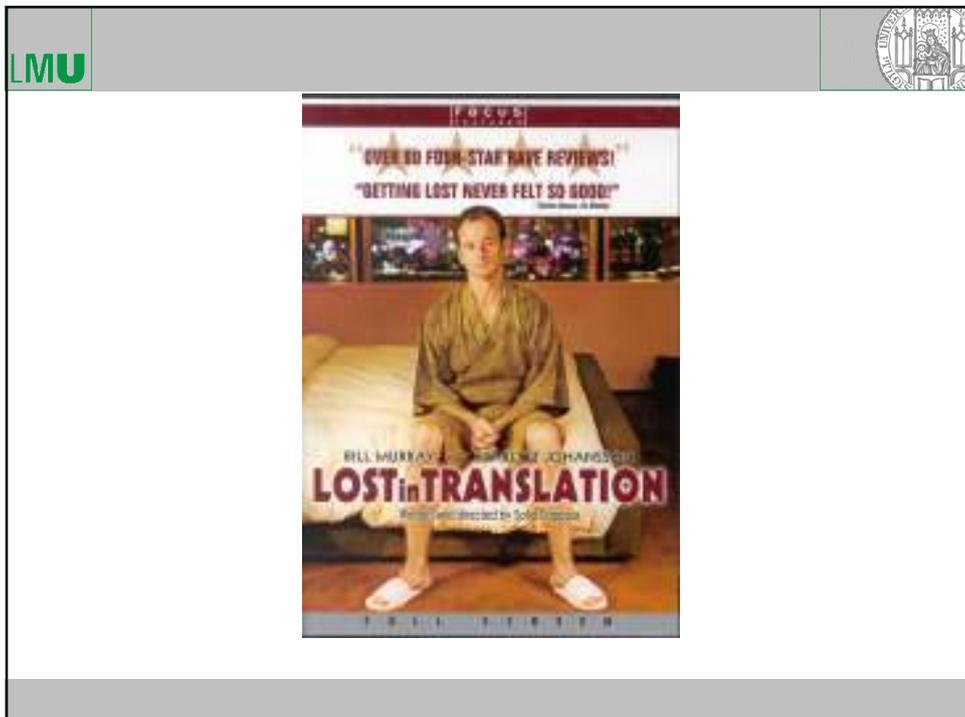
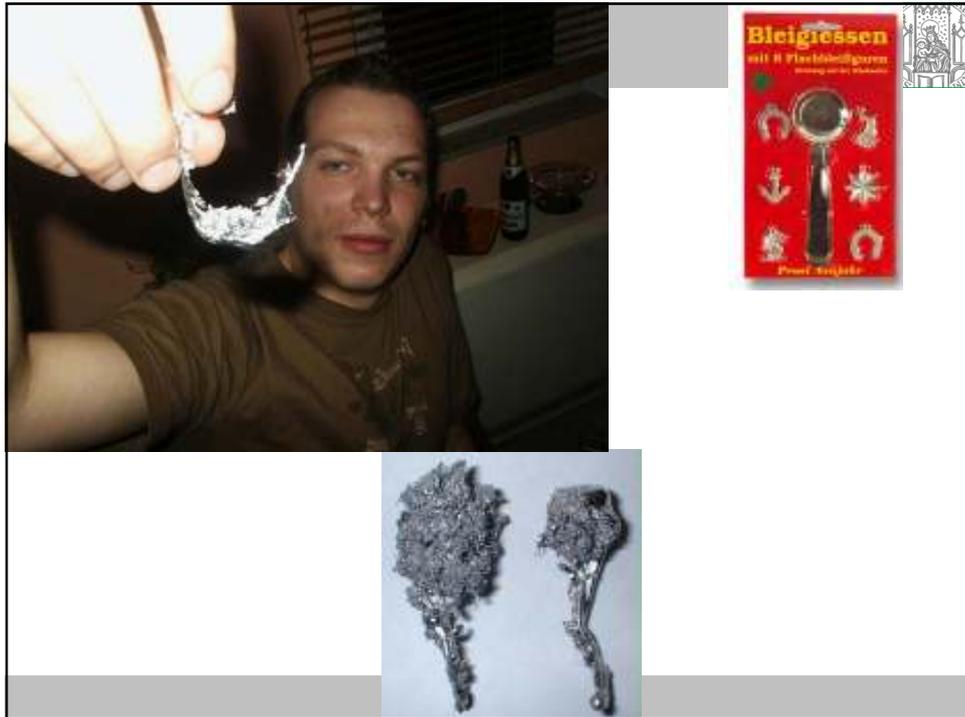
## LMU Workflow 2: Group meeting (Broad oaks)



- Translated/checked cases
- All issues / difficulties discussed
- Disagreement = vote
- Other expert sources
- Changes made
- Comments highlighted
- Send Case to Author



<p>In the past, cases of mental retardation in infants, who have swallowed peeled off wall paints which contained white lead (lead oxide), have been observed in the USA.</p> <p>More dangerous are exposures where lead is absorbed by the respiratory tract. Non-occupational activities like Bleigießen, however do not lead to toxicologically relevant exposures.</p> <p># Infotext Hyperlinks:</p> <p><a href="#">□</a></p> <p>half-life : 20 days</p> <p>content of lead in soft tissue:</p> <p>There it is <b>predominantly</b> bound to the cell membrane and the mitochondria,</p> <p>Normal values for the liver: 1mg/kg; kidney 0,8 mg/kg and brain tissue: 0,1mg/kg</p> <p><a href="#">□</a></p> <p>It is mainly excreted by the kidneys (see picture 2)</p> <p><a href="#">□</a></p>	<p>Formatted: Font: 12 pt, Complex Script Font: 12 pt, English U.K.</p> <p><b>Comment [ADV12]:</b> Dear Michael - a hyperlink would be great - something like this: A popular German custom. A candle is lit, and small chunks of lead are melted in a spoon held over the candle. The molten lead is then quickly poured from the spoon into a bucket of cold water, where it hardens almost immediately. Each person tries to determine what he or she 'sees' in the hardened lead figure. Often the lead figure is held up to a candle or other light, and the shape of the shadow it casts aids in this important decision. The shape of the lead determines the future of that person for the year to come. Complete sets are available for this activity from stores in Germany.</p> <p><b>Deleted:</b></p> <p><b>Deleted: ????</b></p> <p>Formatted: Font: 12 pt, Complex Script Font: 12 pt, English U.K.</p> <p><b>Deleted: -</b></p> <p>Formatted: Font: 12 pt, Complex Script Font: 12 pt, English U.K.</p> <p><b>Deleted:</b></p> <p>Formatted: Font: 12 pt, Not Bold, Complex Script Font: 12 pt, English U.K.</p> <p><b>Formatted: Font: Not Bold,</b></p>
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### Working with a VP copy

- Advantages:
  - VP structure, network and multimedia included
  - Author can make annotations for other authors to mark changes
- Disadvantages:
  - Tracking of changes is difficult
  
- Recommended when the VP structure shall be transferred and most of the multimedia material can be transferred.



### Working with a new VP (Rewrite)

- Advantages:
  - Maybe less error-prone
- Disadvantages:
  - VP structure has to be created
- Problems:
  - How can we connect this VP to the Mastercopy?
- Recommended when the structure has to be changed and the VP is much different from the mastercopy



- Create effective learning objectives
- Be aware of what you want to teach
- Be aware of your learning objectives
- Decide whether a copy of a VP is reasonable or if the creation of a new VP is of advantage

Keep your goal in mind!



The audience should be able to:

- **explain** the term learning objective **level 2**
- **interpret** the level of a learning objective **level 3**
- **formulate** effective learning objectives **level 5**
- **analyse** the development of a VP **level 4**
- **name** different examples of VP creation **level 1**
- **assess** problems of VP creation **level 6**



**Thank you for your attention!**