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## Didactical aspects of Virtual Patients in medical training

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Overview



- ▶ What is a Virtual Patient (VP)?
- ▶ Forms of VPs
- ▶ Curricular aspects
- ▶ Integration of VPs
- ▶ Overview – Research on VPs



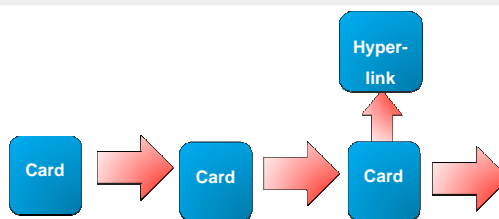
- ▶ "Interactive computer simulations of real-life clinical scenarios for the purpose of healthcare and medical training, education, or assessment" [Ellaway06]
- ▶ "Specific type of computer program that simulates real-life clinical scenarios; learners emulate the roles of health care providers to obtain a history, conduct a physical exam, and make diagnostic and therapeutic decisions." [AAMC]



- ▶ Case scenarios
  - ▶ Key-feature cases (teaching/assessing decision making)
  - ▶ Simulations (?)
  - ▶ Paper cases (?)
  - ▶ ...
- NOT (according to most definitions):
- ▶ Standardized patients (SP)
  - ▶ Simulators (Mannequins)
  - ▶ Videos, Podcasts
  - ▶ ...

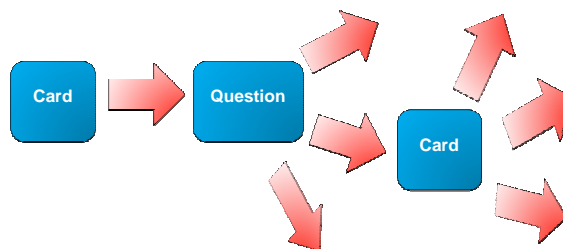
- ▶ How is feedback / instruction given?
- ▶ How is information provided (e.g. text, movie, image,...)
- ▶ Interactivity, instructional design
- ▶ Prior knowledge of diagnosis
- ▶ Sequencing of VPs
- ▶ Setting: Group working or alone, with / without (virtual) tutor
- ▶ Development and maintenance of VPs
- ▶ Curricular integration
- ▶ VP system / Model
- ▶ ...

▶ linear



▶ semi-linear

▶ branched



Advantages	Disadvantages
Risk free training	Effort (time, costs) to create and update
Documentation	Copyright and data protection issues
Standardization	Technical issues
Independent of time and place	

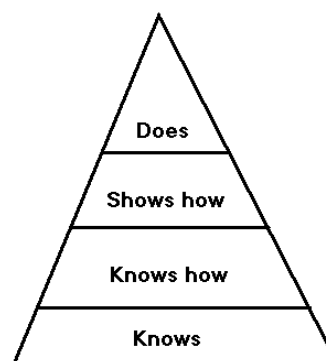
► clinical decision making

e.g. Bed-side teaching

e.g. Simulators

e.g. Virtual Patients

e.g. Lectures, Textbooks



Millers pyramid for assessing clinical competencies

- ▶ Three major aspects of integration [Cook 2004]
  - ▶ accessibility
  - ▶ user-friendliness
  - ▶ provision of extra time



based on a presentation given by N. Berman, gmds meeting Witten 2010

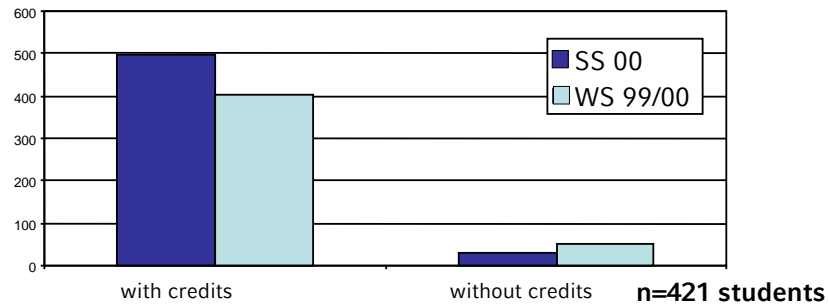


- ▶ Three major aspects [Cook 2004]
  - ▶ accessibility
  - ▶ user-friendliness
  - ▶ provision of extra time
- ▶ Reward for authors/course tutors, integration of teachers
- ▶ Overall didactical concept of curriculum
- ▶ Integration strategy (depends on learning objectives and relation to curriculum)



- ▶ voluntary without any integration: > 90% do nothing
- ▶ obligatory -> high acceptance, but low time on task
- ▶ credits

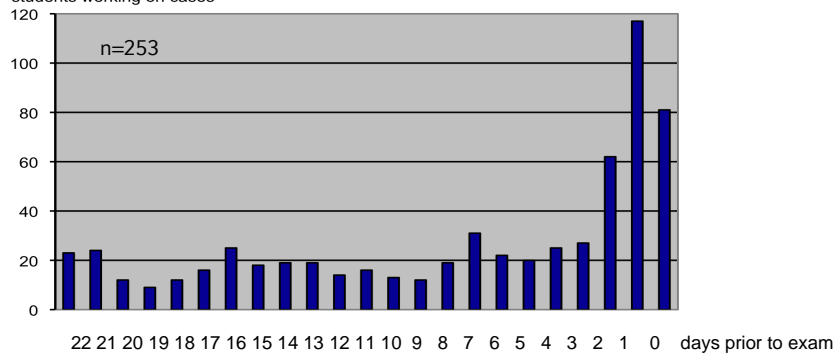
successful VP sessions



- ✓ high acceptance
- ✗ low time on task
- ✗ high administrative effort

- ▶ voluntary without integration: > 90% do nothing
- ▶ obligatory -> high acceptance, but low time on task
- ▶ credits
- ▶ exam relevant

students working on cases



- ✓ high acceptance (>90% complete all VPs)
- ✓ high time on task
- ✗ peak before exam
- ✗ final exam design

- ▶ voluntary without integration: > 90% do nothing
- ▶ obligatory -> high acceptance, but low time on task
- ▶ credits
- ▶ exam relevant
- ▶ learning by teaching

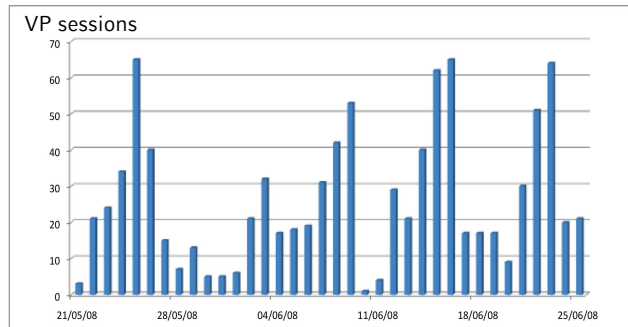




- High motivation of students
- Integration of created VPs into the curriculum
- High tutorial effort (approx. 15 h/student)
- VPs often not usable or only with high reviewing effort
- High effort for students (about 50h / VP)



- ▶ voluntary without integration: > 90% do nothing
- ▶ obligatory: high acceptance, but low time on task
- ▶ credits
- ▶ exam relevant
- ▶ learning by teaching
- ▶ assessment
- ▶ PBL sessions
- ▶ preparation of seminars/tutorials



- ✓ High acceptance
- ✓ Regular sessions (weekly seminar)
- ✗ Effort / Engagement of teachers

- ▶ Critical mass of VPs
- ▶ Defined with learning objectives matching the overall curriculum
- ▶ Didactical + technical integration strategy
- ▶ Feedback of students (Evaluation, Contact with tutor, discussion board, focus groups...)



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## Research on VPs



- ▶ VP compared to nothing: improved learning outcomes
- ▶ VP compared to other interventions: confounders!
- ▶ VP compared to SP: little difference, except empathy
- ▶ VP compared to Paper Cases in PBL course: no difference / better learner ratings for VP

Further studies:

- ▶ Comparative studies on VP design (configuration, instructional method, presentation)

Cook DA, Triola MM (2009). Virtual patients: A critical literature review and proposed next steps. Med Educ 43:303-11



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## Thank you!



### Literature:

- 📖 Cook DA, Triola MM (2009). Virtual patients: A critical literature review and proposed next steps. Med Educ 43:303-11
- 📖 Hege I, Kopp V, Adler M, Radon K, Mäsch G, Lyon H, Fischer MR (2007). Experiences with different integration strategies of case-based e-learning. Med Teach 29(8):791-7.
- 📖 Cook DA (2005). The research we still are not doing: An agenda for the study of computer-based learning. Acad Med 80: 541-548
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