What is a Digital Textbook

Predrag Pale

The purpose of a textbook

- to introduce
- to explain
- to teach
- to verify
- to assist

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Tutorial

- what
  - introduction to the field/problem
  - explanation of the purpose
  - description of the main idea/foundations
  - description of the possibilities/applications
- how
  - story telling
  - (interactive) video documentary
  - exceptionally: recorded lecture
- when
  - once, on the beginning

(Theory) Explanation

- what
  - how do things work
  - why do they work in such a way
  - how is it used
- how
  - interactive, very short steps
  - explanation, demonstration, question
  - repeating, broadening, accelerating
- when
  - once, on the beginning
  - after long time of passiveness
  - again, if very low results in exercise

Exercising

- what
  - fortifying the new knowledge & skills
  - achieving the required skill level
- how
  - challenges with progressive complexity
  - automated verification of results
  - automated adjustment of complexity
  - comparison with statistics of success
  - referrals to explanation phase
- when
  - each time skills need to be improved

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Experimenting

- what
  - broadening of
    - understanding
    - knowledge
    - skills
- how
  - virtual laboratory
  - predefined exercise
    - mandatory
    - recommended
    - bonus
  - free exploration
- when
  - each time skills need to be improved

Referrals

- what
  - reminders
  - quick reference
  - overview (of functions and parameters)
- how
  - lexicon, glossary
  - lookups
  - guides, charts, quick reference
- when
  - often in use

Recepies

- what
  - – shortcut for specific tasks
  - – in complex environments
- how
  - – step by step guide
  - – charts, diagrams, photo story
- when
  - – at the beginning of usage
  - – for specific (complex) tasks

Verification of knowledge

- what
  - verifying possession and understanding of knowledge
  - verifying skills
  - comparison with statistics
- how
  - quiz, test
  - automated verification of results
  - large database of questions
  - algorithm based variation of questions
- when
  - at the end of learning process
  - will be repeated whenever a renewal or improvement of skills is required

Conclusion – requirements

- different types of materials
  - in different times
  - for different purposes
- interactive
  - stop, REW, FF, SEEK, search, bookmark
- adjustable
- enchanting

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Conclusion – authors

- multiple authors expected
- multidisciplinary
  - domain knowledge
  - multimedia technology
  - dramaturgy of multimedia
  - psychology of learning
  - quiz and test development
- teams

Conclusion – resources

- multimedia clips
  - to be used to enrich the presentation
- development support
  - design
  - programming
  - designing
  - performing
- financial support

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