

# PEDAGOGICAL AND TECHNICAL REQUIREMENTS FOR THE DEVELOPMENT OF EDUCATIONAL E-MODULES FOR DENTAL CONTINUING PROFESSIONAL DEVELOPMENT

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## Aims

To develop the pedagogical guidelines and technical requirements for the development of educational electronic modules (learning units) for the continuing professional development of dental professionals.

## Methods

A team was organized, including dental academics and professionals, distance learning and e-learning expert, adult learning experts, a computer programmer and designer. The team performed a literature and internet review, discussed the outcomes and developed the general requirements for the creation of dental CPD e-modules.

## Results

### Characteristics of Adult Learning

- they need to know the purpose of their education
- they already possess certain values and experiences
- they enter education having specific needs and goals
- they have already established learning patterns (active, reflective, theoretical, experimental)



### Principles for designing adult learning Educational Material

- thinking linked to action
- educational process to address learner's needs & interests
- interaction between learner – content
- promote critical thinking
- self-assessment activities, feedback, motivation

## Visual and Pedagogical Design of e-learning content

To assimilate and interpret the (mainly) visual content, learners in technology-based environments develop a series of **psychological processes** such as visual perception, attention, understanding, motivation, memory, thinking and conscience.

### 1. Visual – perceptive learning

...is a reading activity (different from traditional reading; a complex reception of the visual content)

- The particularities of visual perceptive learning in technology-based learning environments emerge from the **characteristic of learning materials**, which should include all the means that ensure the **transfer of knowledge**, associated to a specific methodology, since the contact with the course tutor for further explanations is difficult to achieve.
- The use of visual perceptive language in learning should aim to achieve the following **main objectives**, expressed in behavioural terms:
  - Acquire **pertinent information** in respect to its objective
  - Distinguish **the informative** elements from the connotative ones
  - Analyse and capitalize means that allow to uncover **the intention of the message**, separating symbolic means from non-symbolic ones
  - Achieve a **critical stand** in treating the symbolic information received
  - Develop its capacity to **select new sources**
  - **Integrate** received information into personal experiences
  - Recognize the ideology and inner intention of **symbolic messages**, offered by means of non-specific visual languages expressions



### 2. Pedagogical design

It requires decisions on specific procedures and rules in every step of the process, from the choice of the learning objectives to the choice of the assessment strategies

#### Designing rules

- Follow simultaneously **competences development and knowledge transmission**
- Facilitating **independent content structuring** actions in an effort of synergistic action of controlled and uncontrolled learning
- Choose appropriate manners of issues raising in order to assist independent **productive thinking**
- Anticipate and organize the development and training of effective **thinking strategies**
- Organize content structure so as to vary **mental activity levels**
- Create conditions and elements for teaching and learning **efficient orientation**
- Create **self-control** didactical situations

#### Characteristics

- **instructions** on study management and on the inter-connection of the various features (i.e. text with images)
- clear **aims, expected outcomes** and key-words
- **simple texts** and wording
- referrals to **personal experiences**
- **examples** and case-reports
- tests and **self-assessment** activities, providing feedback
- explanatory **images / videos** replacing relevant texts
- **fragmented** content
- **highlighted areas/ frames** for the key points of the content
- **summaries** of chapters
- **learner-friendly** writing
- clear indication of the possible **difficulties**
- list of related literature / internet sites

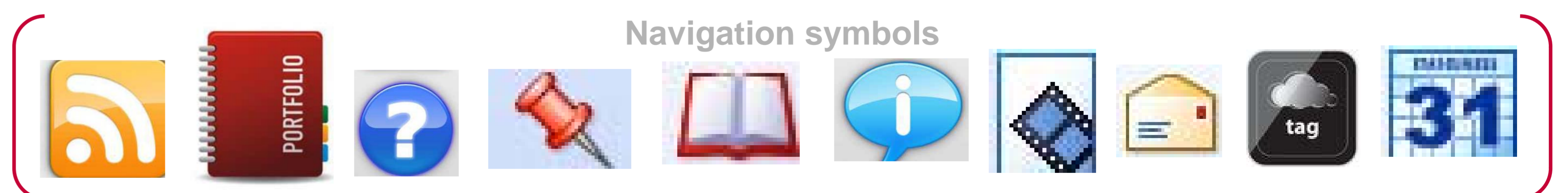
### 3. Text design principles

Text design must enable the visual-perceptive learning: **knowledge organization and navigation, semiotic process, communication and content interaction.**

- ❖ Clarity and elegance
- ❖ Predictability and regularity
- ❖ Standardisation and consistency in the use of style
- ❖ Good sense of direction in the content
- ❖ Unity and simplicity
- ❖ Position based on importance
- ❖ Grouping elements based on their significance
- ❖ Including lists and tables to structure the content
- ❖ Spacing
- ❖ Highlighting text units
- ❖ Balance and symmetry

### 4. Technical requirements

- The development of the e-module (interactive website) should be based on Web Design Standards established by the W3C.
- Interoperability can be achieved by using XHTML and CSS technologies
- Unicode character encoding for worldwide use



## Conclusions

The development of e-modules for dental continuing development requires a team work from experts in various fields and must be based on clear pedagogical, content design and technical rules.