

### **W3.4 Testing carrying-out**

Project SGBD  
Test data collected

#### **Implementation of New tools in Virtual Mobile Learning Environments**

Paul: prepare a material about new tools but also new approaches in implementation of New tools in Virtual Mobile Learning Environments.

#### **THE VIRTUAL MOBILE LEARNING ENVIRONMENT**

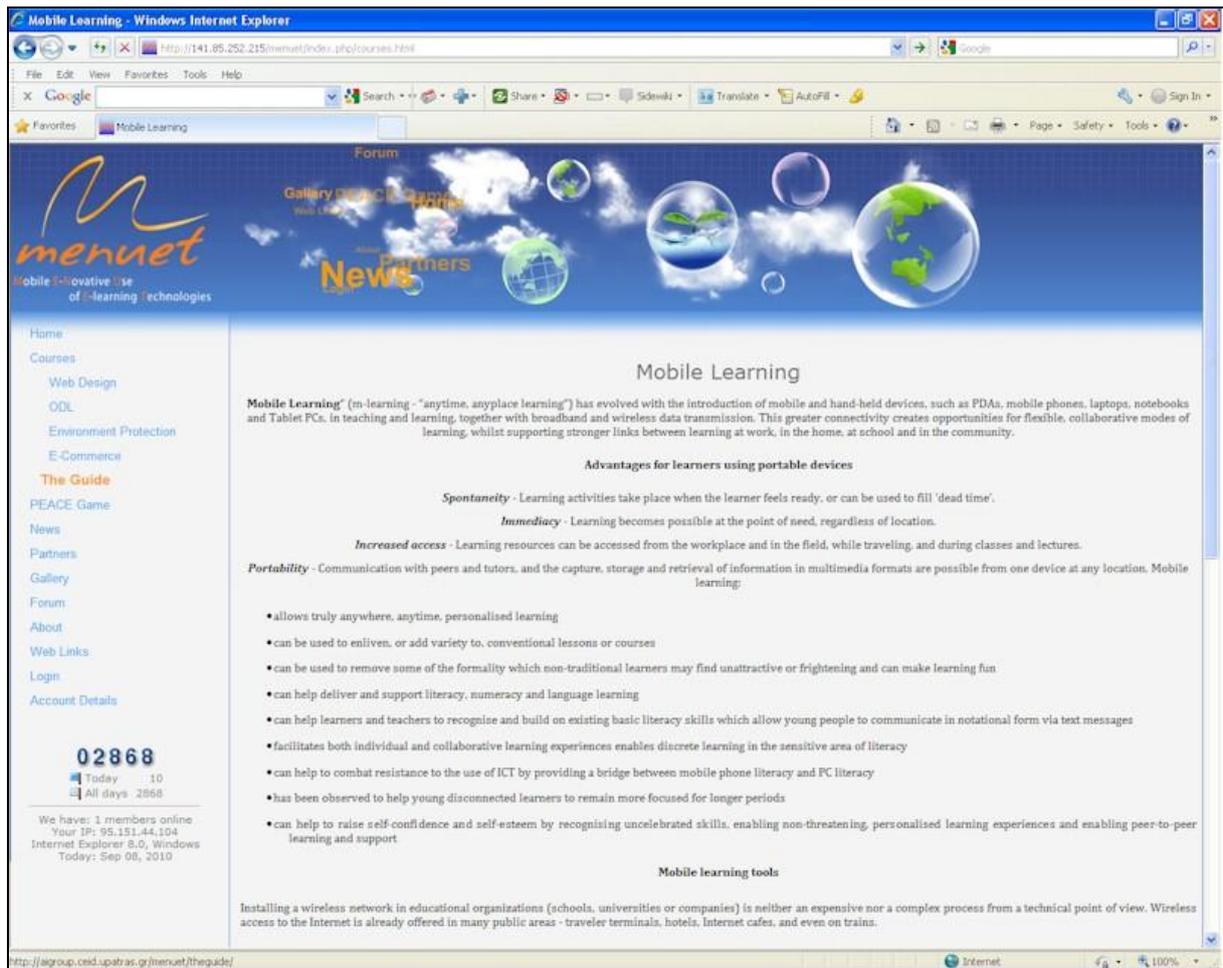
One of the main objectives of the MENUET project was to create a new learning environment with basic and practical courses for trainers, trainees and practical pedagogical guidelines for teachers using ICT, especially in networked E- and M-learning environments. This objective was particularly aptly prophetic as the number of workers and students in mobile situations are increasing exponentially. It has been estimated that the number of mobile workers will total 1.3 billion worldwide, 35 percent of the workforce, by 2013!

The specific aims of MENUET were targeted on the design, development, testing, evaluation and dissemination of new innovative methods, on-line LMS tools and rich content multimedia (E-Content) used for training teachers, VET trainers and students in three major sectors (ICT, environmental management and business).

The Multimedia Centre and the online pedagogical community is at the Project Website at

<http://menuet.etcenter.ro/>

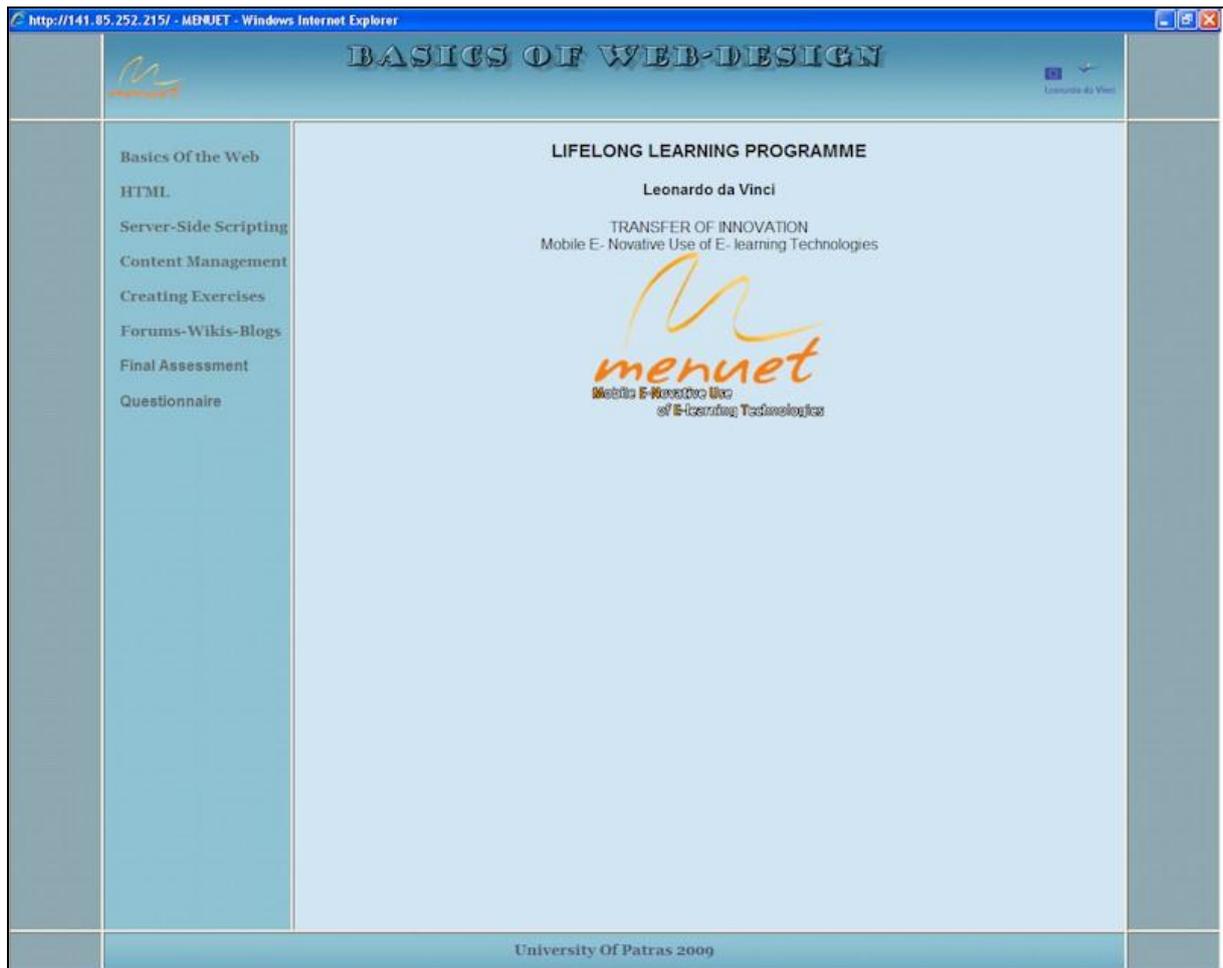
This **Virtual Learning Mobile Environment**



contains

Four specialised courses:

An E-textbook entitled “BASICS OF WEB-DESIGN”



An E-textbook entitled “OPEN AND DISTANCE LEARNING”

http://141.85.252.215/ - MENUET - Windows Internet Explorer

# OPEN AND DISTANCE LEARNING

*menuet*

## LIFELONG LEARNING PROGRAMME

Leonardo da Vinci

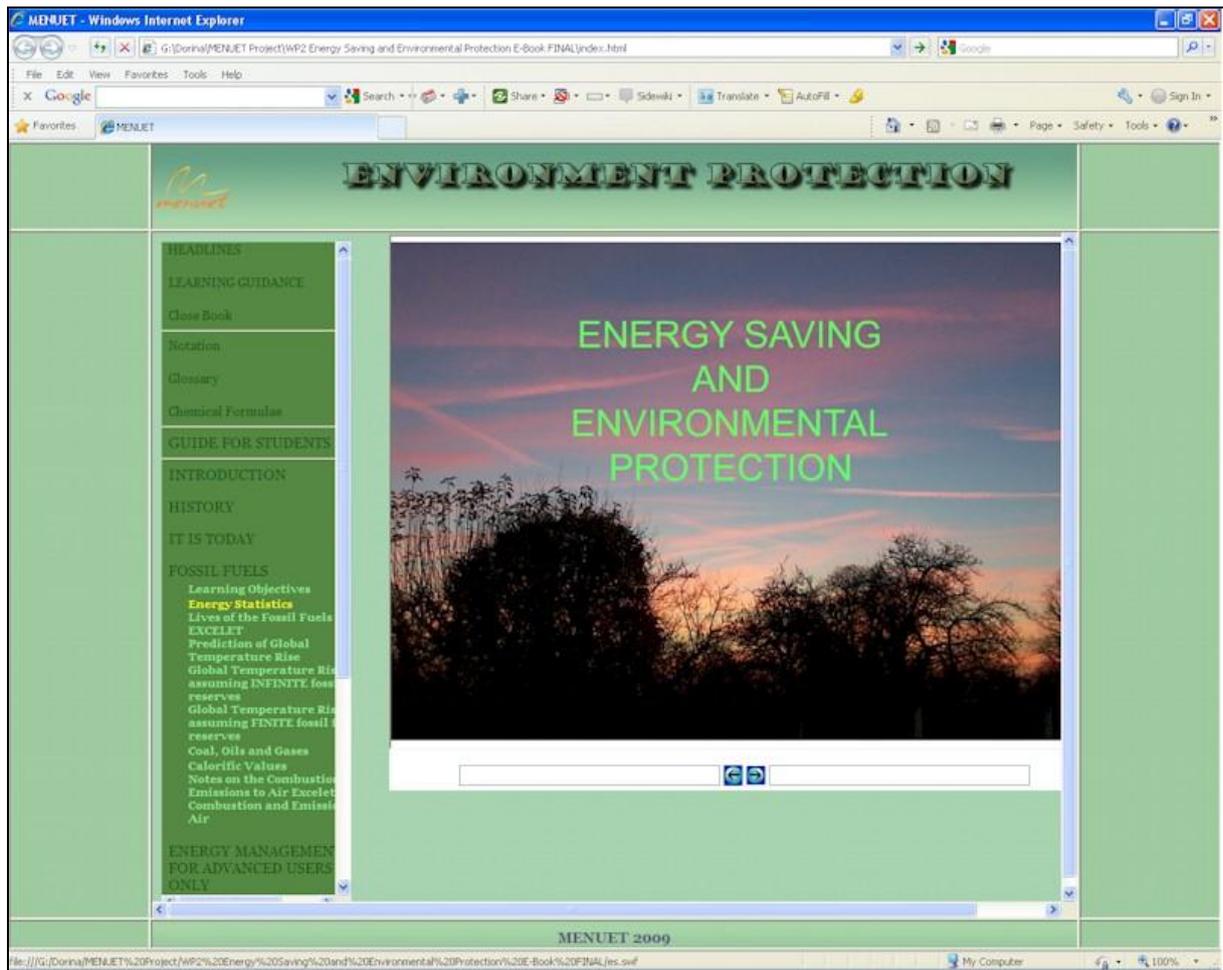
TRANSFER OF INNOVATION  
Mobile E- Novative Use of E- learning Technologies

*menuet*  
Mobile E- Novative Use  
of E- learning Technologies

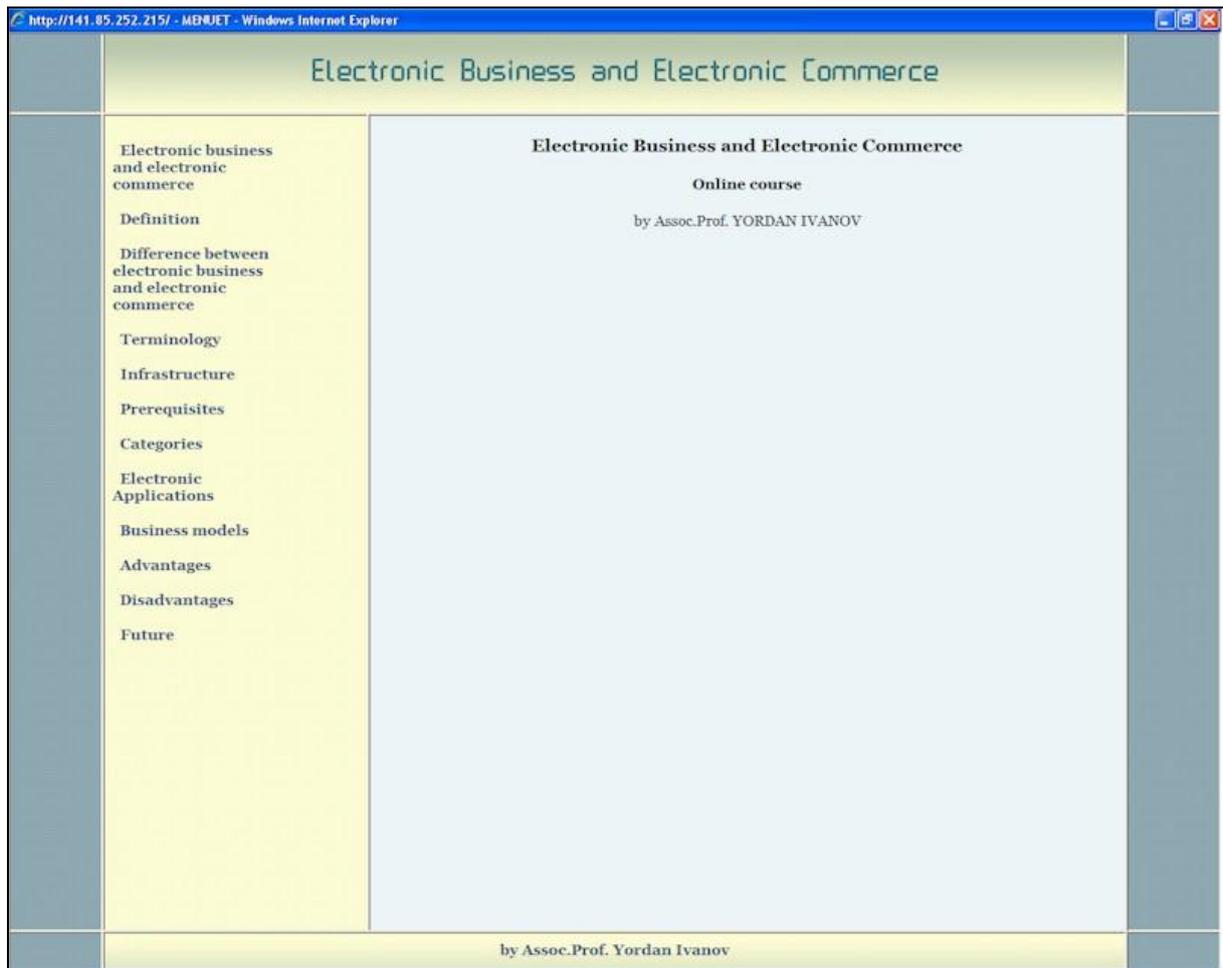
- Definition of the E-learning Concept
- What Is E-learning?
- e-learning\_BG
- Short History of E-learning
- Timeline
- Specific Pedagogical Elements for E-learning
- Benefits, Obstacles and Solutions
- Teaching and Learning online - A Real Art?
- e-learning Concepts
- Hardware interfaces for -Learning
- Hardware and Technologies
- E-learning Technologies
- Learning Management Systems
- Development of online learning materials (e-content)
- Measuring learning results ? Design of online assessments and tests
- E-learning and the Web
- The Future of E-learning
- Glossary of Terms
- E-learning Resources
- E-learning Development

University Of Patras 2009

An E-book entitled “ENVIRONMENTAL: PROTECTION”



An E-book entitled “ELECTRONIC BUSINESS AND ELECTRONIC COMMERCE”



An E-book and guidelines for developing m-learning material on the Internet – The MENUET Guide.

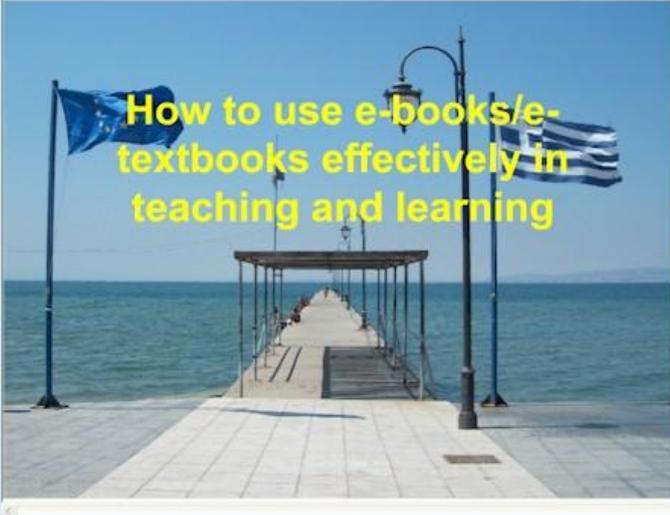
**The MENUET Guide** 

**How to use e-books/e-textbooks effectively in teaching and learning**

*Adapted from Gagne's Nine Commandments of Instruction*

1. Provide Learning Guidance
2. Gain Attention
3. State Learning Objectives
4. Stimulate Recall of Prior Knowledge
5. Present the Stimulating Interactive Course Content
6. Elicit and Assess Performance
  - Quiz Questions
  - Elicit Answers
  - Provide Feedback
  - Score Performance
  - Revision
  - Assess Performance
7. Enhance Retention

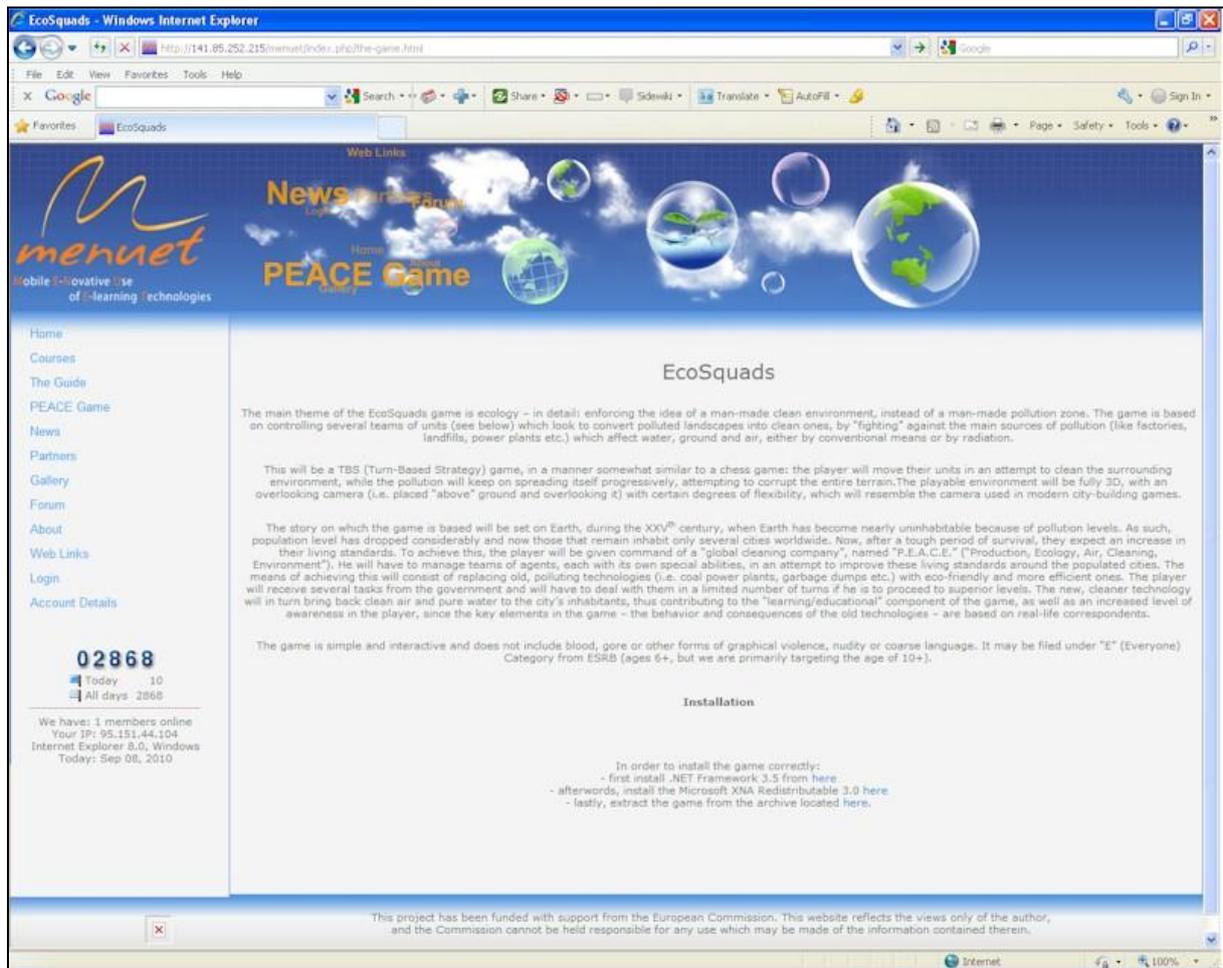
**Background**



MENUET 2009

My Computer 100%

A "PEACE" Game.: EcoSquads

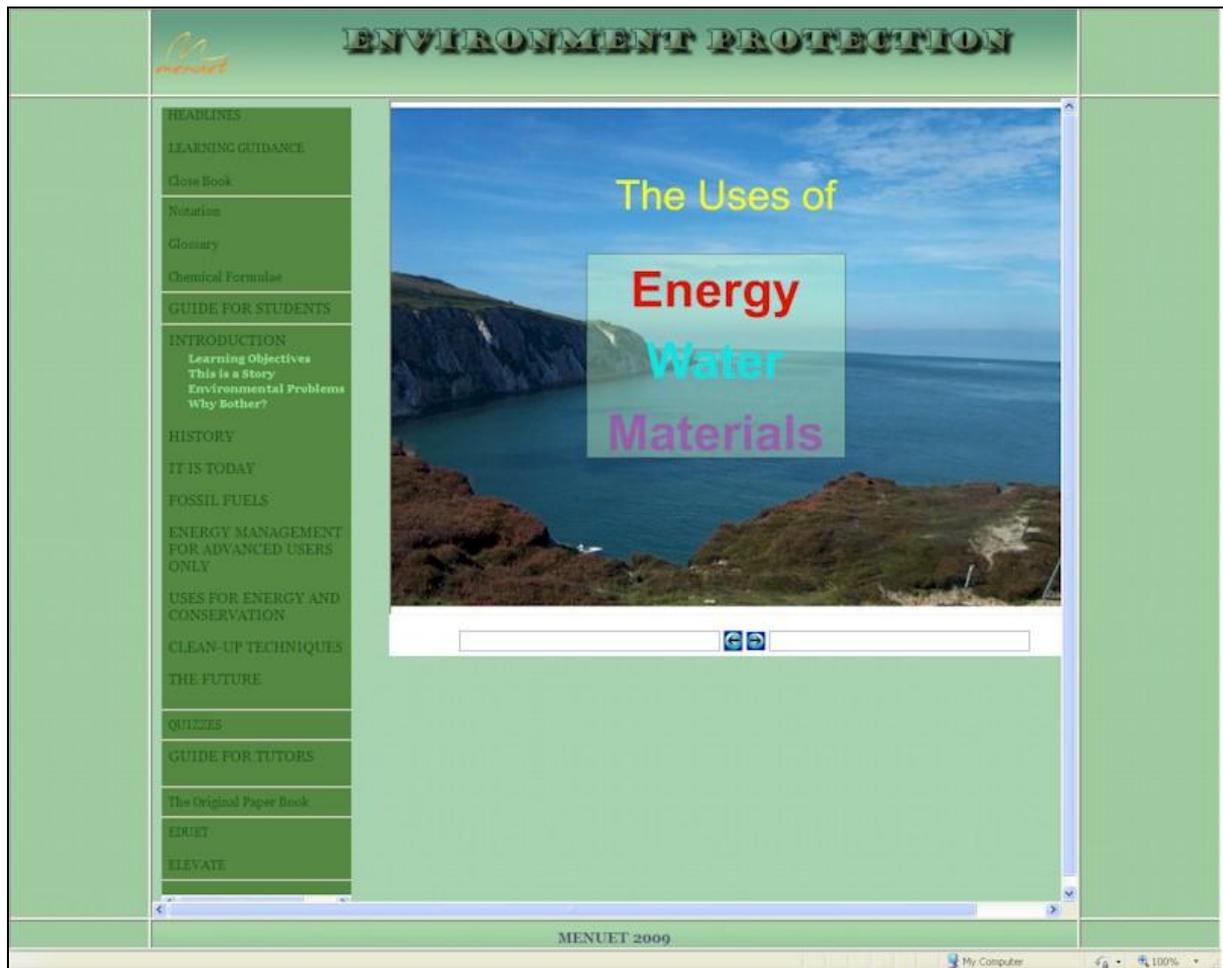


and the Virtual Collaborative Forum.

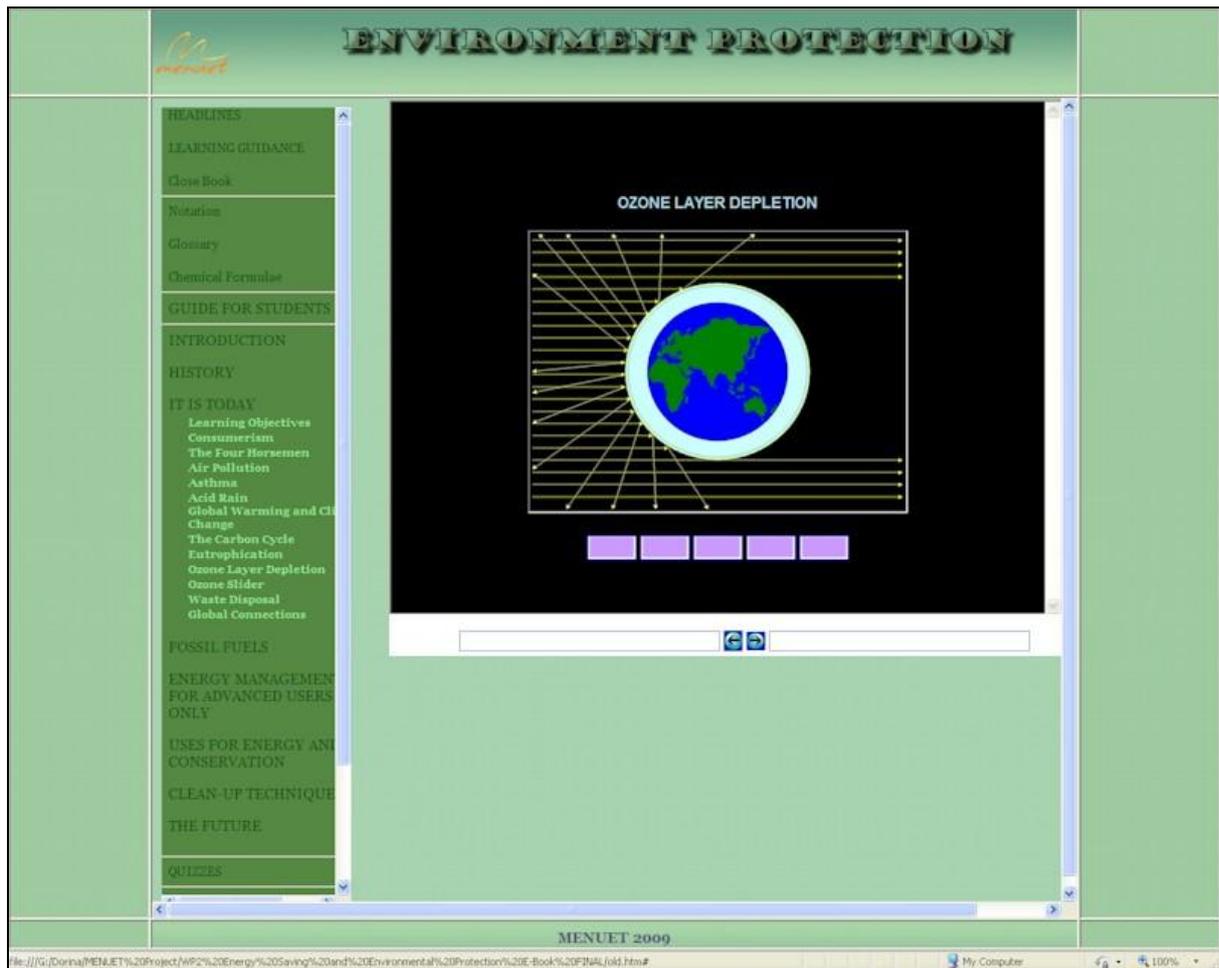
## NEW TOOLS

To assist the transition from classroom “Talk and Chalk” to independent Mobile E-Learning, the New Tools developed and intrinsic to the resources provided at the **Virtual Learning Mobile Environment** include:

- The Use of multimedia (music, sound effects, voiceovers, videos and animations) in interactive presentations



- Innovative software, sliders and popups



- The use of interactive software and spreadsheets containing ActiveX controls (scrollbars, dropdown selection boxes, etc.) for examinations of system behaviour (i.e. the effects of independent system variables on the overall energy consumptions of buildings, combustion efficiencies and CO<sub>2</sub> release in carbon neutral approach analyses)



# ENVIRONMENT PROTECTION

- HEADLINES
- LEARNING GUIDANCE
  - Class Book
  - Notation
  - Glossary
  - Chemical Formulae
- GUIDE FOR STUDENTS
- INTRODUCTION
- HISTORY
- IT IS TODAY
- FOSSIL FUELS
- ENERGY MANAGEMENT FOR ADVANCED USERS ONLY
- USES FOR ENERGY AND CONSERVATION
  - Learning Objectives
  - Heating of Buildings Self
  - Electricity Savings Data
  - Fuel Savings Database
  - ELEVATE
  - Renewable Energy Data
  - Fuel Cell Slider
  - Wind Turbine Slider
  - Wind Turbine Power
  - Water Turbine Power
- CLEAN-UP TECHNIQUE
- THE FUTURE
- QUIZZES
- GUIDE FOR TUTORS
- The Original Paper Book

## BUILDING ANNUAL ENERGY REQUIREMENTS

INPUT

Bulgaria

BUILDING DIMENSIONS

16 WIDTH (m)

8 DEPTH (m)

4 HEIGHT (m)

U-values (W/m<sup>2</sup>K)

105mm Solid Brick 3.3

6mm Single 5.6

Uninsulated Pitched 1.5

Solid Floor 0.16

GLAZING (% of WALLS)

25

Inside Air Temperature °C

20

VENTILATION (Air Changes per hour)

1

CALCULATED VALUES

AREA of WALLS (m<sup>2</sup>) 192

AREA of ROOF (m<sup>2</sup>) 128

AREA of BASE (m<sup>2</sup>) 128

AREA of GLAZING (m<sup>2</sup>) 48

AREA of MASONRY (m<sup>2</sup>) 144

AREA for HEAT LOSS (m<sup>2</sup>) 320

ENCLOSED VOLUME (m<sup>3</sup>) 512

U-value 2.93

HEAT LOSSES (W/annum)

96738

41628	42	MASONRY
23547	24	GLAZING
16819	17	ROOF
1794	2	BASE
14950	15	VENTILATION

Instructions

Mean Annual Outside Air Temperature °C

10

**ENVIRONMENT PROTECTION**

HEADLINES

LEARNING GUIDANCE

Index Book

Situation

Glossary

Chemical Formulas

GUIDE FOR STUDENTS

INTRODUCTION

HISTORY

IT IS TODAY

FOSSIL FUELS

- Learning Objectives
- Energy Statistics
- Lives of the Fossil Fuels
- EXCELETT
- Prediction of Global Temperature Rise
- Global Temperature Rise assuming INFINITE fossil reserves
- Global Temperature Rise assuming FINITE fossil reserves
- Coal, Oils and Gases
- Calorific Values
- Notes on the Combustion Emissions to Air
- EXCELETT Combustion and Emissions to Air

ENERGY MANAGEMENT FOR ADVANCED USERS ONLY

TIPS FOR ENERGY AND CONSERVATION

CLEAN-UP TECHNIQUE

THE FUTURE

K13    =J13\*3.6

	A	B	C	D	E	F	G	H	I	J
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**Combustion Calculator**

Propane  
Propene (propylene)  
**Toluene (methyl benzene)**

Toluene (methyl benzene)

	C	H	MJ/kg	MW	kWh/kg	CO <sub>2</sub> /kg	CO <sub>2</sub> /MJ	CO <sub>2</sub>
	7	8	46	92	165.60	3.35	0.07	

Atomic Weights

C 12

H 1

Molecular Weights

O<sub>2</sub> 32

CO<sub>2</sub> 44

Combustion Calculations / Formulae and Calorific Values

MENUET 2009

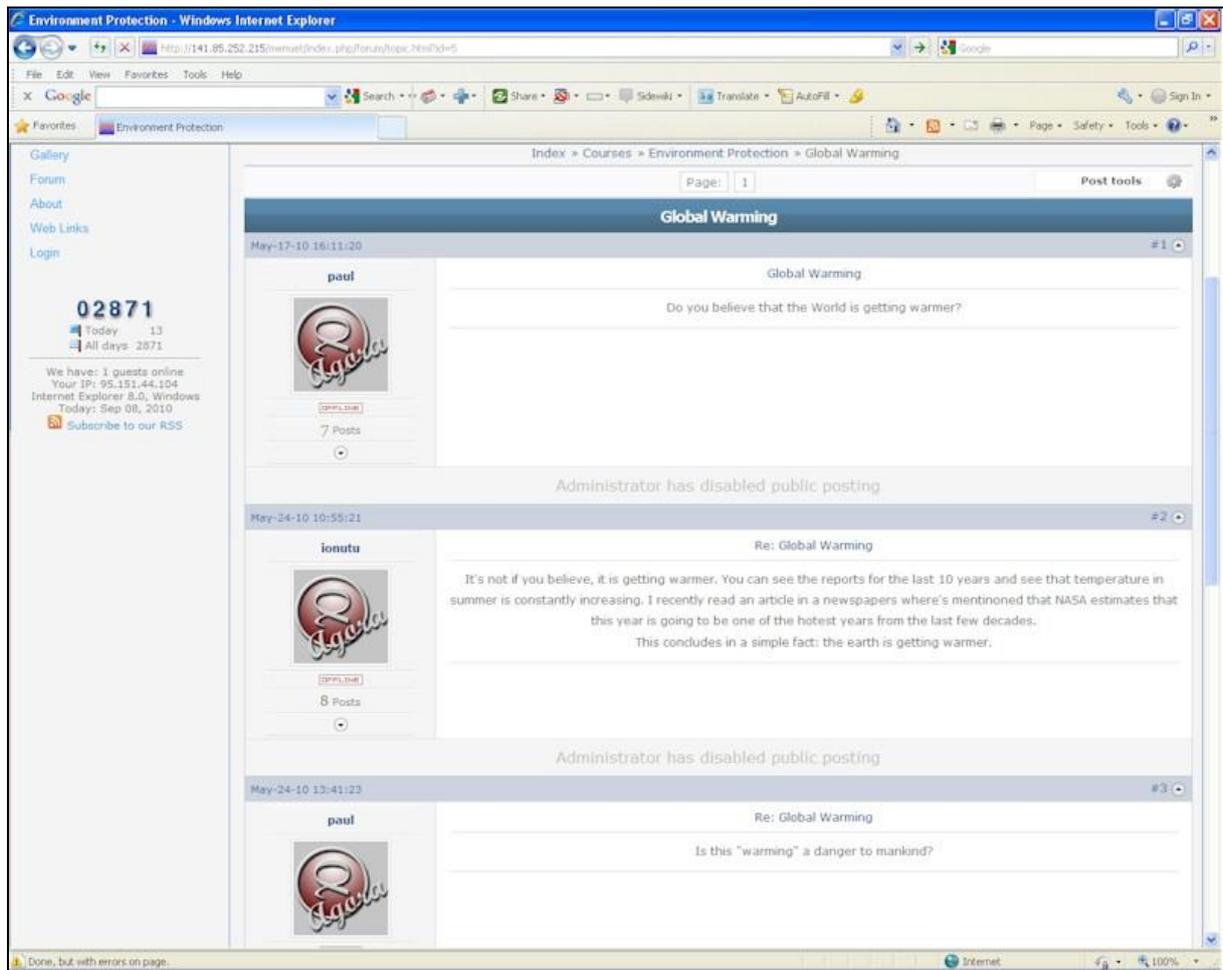
- Quizzes, Games, Automatic Scoring, Feedback and Revision

The screenshot shows a web browser window displaying an interactive quiz. The page has a green header with the text "ENVIRONMENT PROTECTION" and a logo on the left. A vertical navigation menu on the left lists various topics such as "GUIDE FOR STUDENTS", "INTRODUCTION", "HISTORY", "WHAT IS TODAY", "FOSSIL FUELS", "ENERGY MANAGEMENT FOR ADVANCED USERS ONLY", "TIPS FOR ENERGY AND CONSERVATION", "CLEAN-UP TECHNIQUE", "THE FUTURE", "REVIEWS", "GUIDE FOR TUTORS", "The Original Paper Book", "DUET", and "REVISE".

The main content area is a yellow box titled "ACID RAIN AND GLOBAL WARMING QUIZ". It contains the question: "How does acid rain production contribute to global warming?". Below the question is a text input field containing the answer: "By killing vegetation and algae which absorb carbon dioxide." A "CHECK SCORE" button is next to the input field, and the score is displayed as "100 %". A feedback message says "Well Done! This is the correct answer." Below the score are two buttons: "REVISE" and "TESTS". At the bottom of the yellow box is a search bar with a magnifying glass icon.

The browser's status bar at the bottom shows "MENUET 2009" and "My Computer".

- Storage and retrieval of data entered in interactive web forms



- The use of Web2.o-based communication and collaboration technologies such as discussion forums, chat, e-mail, blog, Wikipedia publishing systems, IP-based audio, videoconferencing and interactive TV

### **W3.6 Data analysis for testing**

**New strategic approaches** for mobile educational use of wireless computing, Internet and multimedia-rich interactive digital learning content in form of e-books/e-textbooks

**Paul:** make a document with the new strategic approaches (decentralization of education, student-centered learning, use of entertainment, the teacher is now a script; class as a theater stage; the role of the teachers and trainers is changing) and new things (approaches)

### **BACKGROUND**

The Lisbon European Council set the European Union the strategic goal of “becoming the most competitive and dynamic knowledge-based economy in the world”. This strategy was confirmed by the Barcelona summit in March 2002, where it was stated that “European education and training systems should become world reference by 2010 and that closer cooperation should be promoted in the area of Vocational Education and Training (VET)”.

The adoption of the "Copenhagen Declaration" by 31 Ministers of Education, the European social partners and the Commission in November 2002 was a direct and concrete follow up to the broader objectives agreed in Lisbon and Barcelona. The Copenhagen Declaration was a significant step forward as it identified a set of specific issues and challenges where increased European cooperation in VET is required and welcomed.

The MENUET Project responded directly to some of the important goals and objectives pointed out in the EU priorities so as to focus attention to the learning needs of teachers and trainers in VET, to promote employability and competitiveness and so strengthen the European dimension of VET

### **E-LEARNING TECHNOLOGIES**

E-Learning Technologies use interactive multimedia (the simultaneous transmission via computer screens of text, graphics, computer software, animation, video, voice-overs and music in stereo sound, as well as virtual reality worlds). The use of E-Learning Technologies allows users interaction with controlling computer software programmes and may be used effectively in education and training, Sophisticated computer hardware and software are available for the production of high quality flexible training materials and at low cost.

Interactive teaching materials enhance the learning process; are enjoyable; and, using wireless networks, may be used anywhere, at any time and by anyone. An individual has the freedom to learn at one's own pace, to select the appropriate level and to pick times for study, so as to be able to study at work or at home or in travel. The use of this dissemination medium, if prepared carefully and comprehensively can eliminate the need for face-to-face workshops, seminars, conferences, site visits and

attendance at technical fairs, saving time, travel and fuels and so also reducing polluting emissions to air.

All the elements involved in the delivery of materials in classroom situations can be incorporated via video and sound. By making the multimedia package multi-dimensional with help menus and cross-links, the user may interrogate the system, just as questions are asked and answered in a classroom situation. The multimedia instructional package never becomes tired and never retires. Each use is as fresh as the first. An infinite amount of materials and knowledge can be accessed via the Internet.

## **MOBILE LEARNING**

At the time of the EDUET Project, upon which the MENUET TOI Project was based, the sole mobile computing device was the expensive, heavy, hot and awkward TABLET PC.

There has since been a major progression from desktop systems to a proliferation of handheld products for wireless mobile e-learning - Netbooks, the iPhone/iPod, the iPad and its emulators. During the period of the MENUET Project, Touch Phones have improved considerably so that it is now possible for these also to deliver distance E-Learning courses.

Wireless hotspots, few and far between and expensive to use at the time of the EDUET Project, are now ubiquitous and inexpensive to use.

Traditional learning resources have been lectures, guidance notes, books and journals with learning support via seminars, group exercises and laboratory work. Assessment has been accomplished using coursework and formal examinations.

Many students moved from taking paper notes of lectures to typing notes into their Laptop PCs

With the increasingly sophisticated functionalities of E-technologies, there is the capability of increased interactivity in the learning process. There is a pedagogical revolution involving an evolving change of role of the lecturer from that of imparting information via classroom delivery to a facilitator of dialogue via electronic communication. Thus new pedagogies that support critical and original thinking as learning outcomes, favouring knowledge construction above knowledge acquisition, are being developed. Emphasis is shifting in the teaching approach from a didactic model to a dialogic model, learning through engagement and collaboration rather than through the acquisition and regurgitation of information imparted from the traditional lecturer.

ICT-based learning resources include computer-aided learning and interactive simulations from CD-ROMs/DVDs, intranet or internet-based resources including bibliographic databases. Learning support can be provided using interactive computer-aided learning and various applications software (e.g. spreadsheets, statistical or textual analysis, CAD, 3-D modelling, multimedia, etc). Assessments can be carried out by computerised intranet or internet-based tests with electronic

marking and feedback. There is the possibility of structured discussions on internet forums and other collaborative activities, assignments and projects among peers, lecturers and students.

The MENUET Project envisaged that the future of teaching would rapidly vacate the classroom and become heavily involved in distance-learning using Multimedia/Internet Courseware, CD-ROMs/DVDs, memory storage devices, the internet and intranets incorporating video-conferencing and computer-assisted learning - anywhere and anytime on-demand. This use of the E-Learning Technologies throughout educational systems is already bringing about a major revolution in teaching world-wide and there are opportunities for the development of huge revenue streams.

It is now possible to transmit files throughout the internet containing all the elements of multimedia: video, animation, text, graphics, stereo sound and computer software. Presentations, containing interactive diagrams, pictures, animations, videos and voice-overs may be viewed anywhere in the world at any time. Multimedia lecture material may be produced and presented exactly as in a lecture room situation, but viewed by millions. Broadband telephony, internet, email and videoconferencing can be used for two-way communication between “lecturers” and students

Desktop PCs confine the user to sit at a stationary workplace. Mobile PCs free the user from this constraint as they may be carried anywhere. Until recently, Laptop PCs had to be connected to a telephone line to access the internet, reintroducing the constraint of the fixed workplace when on-line. Telephone sockets were introduced at university locations, including libraries and recently in many classrooms. Hotels increasingly installed internet connections in their guest rooms and some trainlines had wired internet connections on their trains. These dialup connection facilities were replaced with broadband capabilities. In very recent years, wireless connections have become available, freeing the user from having to physically connect to a telephone system and therefore becoming totally mobile. Inexpensive wireless adapters to be plugged into the Universal Serial Bus (USB) port of a Mobile PC are now commonplace . University campuses are now responding fast and wireless networks are being installed at airports, hotels and other locations.

The revolution from the classroom lecturer’s “talk and chalk” to independent Mobile E-Learning required a completely new and different didactical approach. Education became “Edutainment” and the computer became a theatre as the student had to be enveigled to become engrossed in the learning materials without the presence and motivation of the lecturer. Young people are infatuated with music, games and mobile phones. These factors have therefore to be fully utilised for successful Mobile Pedagogical Applications and so were developed as such in the MENUET Project.