

MENUET

Mobile E- Novative Use of E- learning Technologies

W1 STUDY

W1.2

Work package aims: Guide draft

Description of activities:

Writing the draft of the Guide based on the study results (the Guide general structure and sections on technology and didactical methodologies).

Description of methodological / pedagogical framework (where relevant)

Working methods and techniques:

- Systematic approach to training;
 - Curricula development;
 - Training needs assessment
- Quality management tools:
- Key expert assessment, online questionnaires, face-to-face and online individual interviews.

Description of outputs:

E-draft book in Romanian and Greek.

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W1 STUDY

W1.2 Guide draft

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

Introduction

The exponential development of information and communication technologies (ICT) has prompted educational institutions to develop alternatives to traditional classroom teaching methods.

With the increasingly sophisticated functionalities of E-technologies, there is 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 lecturer.

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.

ICT-based learning resources include computer-aided learning and interactive simulations from CD-ROMS, 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.

Desktop PCs confine the user to sit at a stationary workplace.

Laptop PCs free the user from this constraint. They can be carried anywhere and therefore into the classroom. Many students moved from taking paper notes of the lectures to typing notes into their Laptop PCs. 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, but not yet in many classrooms. Hotels are increasingly installing internet connections in their guest rooms and some trainlines have internet connections on their trains. These dialup connection facilities are currently being 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 mobile. Inexpensive wireless adapters to be plugged into the Universal Serial Bus (USB) port of a Laptop PC are now available. Wireless networks however are presently few and far between. University campuses are responding



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fast and networks are being installed at airports, some hotels and other locations. These are, at present, very expensive to use.

E-Learning Technologies

E-Learning Technologies use interactive multimedia (the simultaneous transmission via computer screens of text, graphics, computer software, animation, video, voice-over and music in stereo sound, as well as virtual reality worlds). The use of E-Learning Technologies allows user- 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.

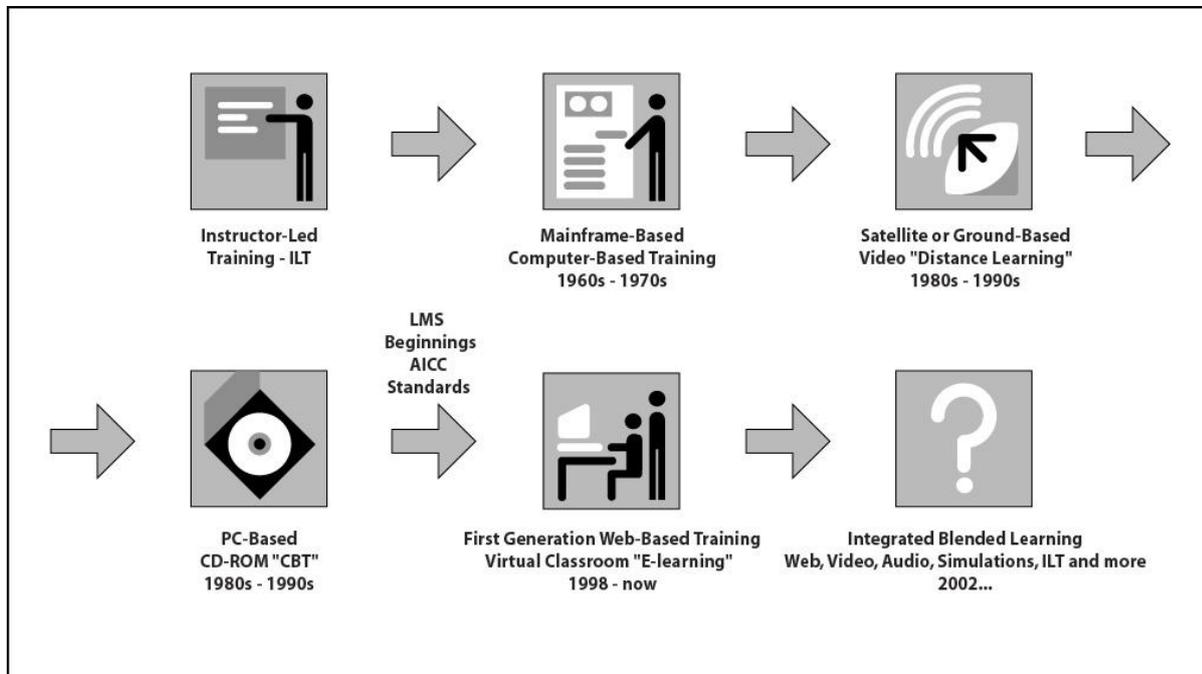
A Brief History of E-learning

E-Learning Technologies have rapidly entered the educational sector and, as a result, more and more new learning tools are appearing. These change the way that teachers and students work and interact thus enabling a more effective learning process.

Historically, educational and corporate training managers have always looked for ways to reduce the cost and improve the effectiveness of training programs and processes through the use of technological advances. Prior to 1980, in-class instructor-led training dominated, although some organisations used mainframe and interactive video approaches. By 1990, the delivery of PC-based CD-ROM content became possible. Since 1998, Internet-based approaches (e.g. **e-learning**) **have become the dominant delivery method for creating fast, scalable, low cost learning and corporate training.**

Until now, the implementation of ICT into education has been in the form of desktop or laptop/notebook computers, local area networks (LANs) and Internet connections and with learning content in different electronic formats, but still accompanied by traditional paper books/textbooks. Those methods usually follow the "classic" form of class-based learning, moving only the content from the paper book pages on to the computer screen. The participants in the process (teachers and students) still remain "tied" to the school LAN, which connects them to the learning content and the school Learning Management System (LMS). The "classical" pen has been replaced by the keyboard and mouse. But, in most cases, these changes do not give the freedom that teacher's and student's "hands" may need, especially teaching and studying some specific subjects, such as art, drawing, design and architecture. In field studies and laboratory work, it is difficult to operate easily via a computer, mouse and keyboard even for notebook owners. .

Evolution of E-Learning Technologies



Multimedia/Internet Courseware

The future of teaching is envisaged as being heavily involved in distance-learning using multimedia, CD-ROMS, the internet and intranets incorporating video-conferencing and computer-assisted learning.

The use of E-Learning Technologies throughout educational systems will bring about a major revolution in teaching world-wide. 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 thus be produced and presented exactly as in a lecture room situation, **but viewed by millions**. There is therefore the opportunity for huge revenue streams arising from the delivery of university courses world-wide.

Broadband telephony, internet, email and videoconferencing can be used for two-way communication between "lecturers" and students. International courses will grow like wild fire on the internet or via exclusive intranets. Mega-courses will be offered by consortia of educational organizations and new E-Learning companies.

The immediate challenges facing educational providers are as follows:

- To set up multidisciplinary multimedia studios for e-book course production.
- To convert existing courses to multimedia e-book format.
- To convert class and lecture rooms to electronic classrooms with stereo sound, computer-assisted learning and internet connection to in-class projection systems.
- To present teaching materials in interactive multimedia formats and to place these on the internet for delivery world-wide.
- To establish exclusive world-wide intranets.



- To set up international videoconferencing facilities in the lecture rooms.
- To network with key universities and organisations world-wide.
- To offer international courses via this facility to in-house students.
- To offer international courses via the established network from the multimedia studios to individuals and groups of students world-wide.

Mobile Learning

Mobile Learning” (m-learning - “anytime, anyplace learning”) has evolved with the introduction of mobile and hand-held devices, such as PDAs, mobile phones, laptops, notebooks and Tablet PCs, in teaching and learning, together with broadband and wireless data transmission. This greater connectivity creates opportunities for flexible, collaborative modes of learning, whilst supporting stronger links between learning at work, in the home, at school and in the community.

Advantages for learners using portable devices

Spontaneity

Learning activities take place when the learner feels ready, or can be used to fill 'dead time'.

Immediacy

Learning becomes possible at the point of need, regardless of location.

Increased access

Learning resources can be accessed from the workplace and in the field, while traveling, and during classes and lectures.

Portability

Communication with peers and tutors, and the capture, storage and retrieval of information in multimedia formats are possible from one device at any location.

Mobile learning:

- allows truly anywhere, anytime, personalised learning
- can be used to enliven, or add variety to, conventional lessons or courses
- can be used to remove some of the formality which non-traditional learners may find unattractive or frightening and can make learning fun
- can help deliver and support literacy, numeracy and language learning
- can help learners and teachers to recognise and build on existing basic literacy skills which allow young people to communicate in notational form via text messages
- facilitates both individual and collaborative learning experiences
- enables discrete learning in the sensitive area of literacy
- can help to combat resistance to the use of ICT by providing a bridge between mobile phone literacy and PC literacy
- has been observed to help young disconnected learners to remain more focused for longer periods
- can help to raise self-confidence and self-esteem by recognising uncelebrated skills, enabling non-threatening, personalised learning experiences and enabling peer-to-peer learning and support

Mobile learning tools

Installing a wireless network in educational organizations (schools, universities or companies) is neither an expensive nor a complex process from a technical point of view. Wireless access to the Internet is already offered in many public areas - traveler terminals, hotels, Internet cafes, and even on trains.



A great variety of mobile computers and devices are now available. Laptop computers outnumber desktop and laboratory computers, while notebook computers and cellular telephones are considered to be most important hardware items.

Advantages of Mobile Learning

- It is much easier to accommodate several mobile devices than several desktops in a classroom, as far less space is required.
- Mobile devices holding notes and e-books are lighter, less bulky and easier to carry than bags full of files, paper and textbooks.
- Mobile devices can be used anywhere, anytime, including at home, on the train and in hotels - such places are conducive to learning because they cannot be disturbed.
- Mobile devices facilitate electronic registration and inputting data in practical lessons or outdoors where desktops are not appropriate or too cumbersome (e.g. in science experiments, kitchens, field trips and on site).
- Mobile devices can accommodate just-in-time learning/reference tools for quick access to data in the field e.g. accessing step-by-step guidelines to help achieve a task.
- Students can interact with the teacher and with each other and so conduct shared assignments and collaborative working, so several students and the teacher can pass the device around a group, or “beam” the work to each other using the infrared function of the PDA, or a wireless network such as WiFi or Bluetooth.
- People who may have lost interest in education do enjoy the use of mobile phones, mp3 players and games devices. If interactive multimedia, music, games and simulations are incorporated into the teaching/learning materials, then the use of mobile devices enhance the possibility of engaging learners by making learning a fun activity.
- Mobile devices may be used as assistive technology for learners with learning difficulties and/or disabilities.

Disadvantages of Mobile Learning

- There is a lack of a common platform (e.g. different sized screens - horizontal screens on some handheld computers, small square screens on mobile phones), so it is difficult to develop content that will work on all mobile devices.
- Mobile devices are more easily lost or stolen than desktop computers and are more attractive to thieves than paper notes.
- Batteries require regular charging, and data can be lost on some devices if this is not done correctly.
- Mobile devices can become obsolete very rapidly.
- There are security issues when accessing wireless networks via mobile devices.
- Bandwidth may degrade with a large number of users using wireless networks .
- Teachers may require extra training in order to be able to use the devices effectively
- There are difficulties with printing, unless the device is connected to a network.



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- Small screens limit the amount and type of information that can be displayed, especially on mobile telephones or PDAs, which also have limited storage capacities.

The EDUET Project

The overall project purpose was to develop Art and Skills for Teaching in the m-Learning Era. Comprehensive guidelines that integrate learning drivers with enabling mobile technologies were prepared in order to provide a logical framework for promoting and coordinating mobile learning practices in support of European education and training.

Objectives were

- To promote and reinforce the contribution of vocational training to the process of innovation, with a view to improving competitiveness and entrepreneurship, and also in view of new employment possibilities.
- To improve the skills and competencies of people, especially young people, in initial vocational training at all levels, with a view to facilitating their integration and reintegration into the labour market.
- To improve the quality of, and access to, continuing vocational training and the lifelong acquisition of skills and competencies.
- To study all relevant didactical concepts and methodologies from the field of mobile learning based on mobile computer technology as well as cognitive science.
- To design and test TWO learning resource models in the form of e-textbooks in language learning (Business English) and a common European subject (Energy & the Environment) for colleges, universities and corporate learners.
- To ascertain whether the Didactical Use of E-books/E-textbooks and Tablet PCs as Effective Innovative Delivering Media.

The specific aim of the EDUET project was thus to determine whether the Tablet PC, equipped with especially designed e-books/e-textbooks, is better suited for educational applications than any other PC with "conventionally" designed e-learning content.

The chosen design of the E-pedagogy model (the Test Methodology) was "tuned" to the special added functionality of the Tablet PC as a new learning tool and included all the special Tablet PC "added educational functions/characteristics over and above the capabilities of the Laptop PC.

It consisted of a project methodology containing the following sequential project processes:

- Specifying the Desired Educational Objectives (defining performance indicators - process and output indicators, quantitative and qualitative indicators)
- The Design of the Courses for the Tablet PC
- Conducting Test Procedures (Design of a Questionnaire to evaluate the Didactical Functionality (incl. Design) of the new e-content delivering media - Tablet PCs and e-courses/e-books.
- Inviting Feedback (from the students and the lecturers to assessing the suitability of the E-learning Tools - the Tablet PC, the courses and the media types contained therein)
- (Gathering the data).



- Quantitative Analyses (Analysing the data). Questionnaire Responses - Select Questions
- Qualitative Analyses (Analysing the data). Questionnaire Responses - Open questions
- Critical Analyses of the Strengths, Weaknesses, Opportunities and Threats of the learning activity
- Ascertaining the level to which the Educational Objectives have been satisfied
- (Reporting the findings).
- Suggesting Improvements to the Teaching/learning Activity using Tablet PCs and e-books/e-textbooks.

Additional Educational Functions and Characteristics of Tablet PC.

A Tablet PC is a computer shaped in the form of an A4-sized notebook with the capabilities of being written on through the use of a digitising tablet or a touch-sensitive screen. The user can use a stylus and operate the computer without having to have a keyboard or mouse. Because tablets are operated with a stylus, rather than the standard mouse/keyboard combination, it is possible to use one effectively while standing - a bit like an e-clipboard. They have low weight and long battery lives.

Moving the stylus over the screen is equivalent to moving the mouse. Pressing it down replaces a left mouse click, while a button on the side of the stylus substitutes a right-click.

Students may hand write their lecture notes into the Tablet PC. These notes, doodles, sketches and scribbles can be saved to be recalled and/or printed out.

Most Tablet PCs run on Microsoft Windows XP Tablet Edition operating system. Tablet PCs use handwriting recognition provided by Microsoft's 'Digital Ink' extension to Windows XP.

When the student becomes proficient at handwriting and recognition, these notes will be converted into typed text files.

It is also possible to instruct half the display to show a QWERTY keyboard - pressing the stylus over this keyboard allows typing.

Text may therefore be input using the operating system's built-in text recognition, the on-screen (virtual) keyboard, voice-recognition, or a physical keyboard (if available).

Tablet PCs that include a keyboard are named convertible or hybrid. The ones that are only a monitor with pen are called slate or 'pure', but these can use external wireless or USB keyboards.

All convertible tablets feature screen-swivelling (pivoting 180° around their centre and rotating between portrait and landscape modes) - useful for presentations or sharing a computer among a group.

Most Tablet PCs can be linked up to other computers for business use, sometimes using wireless networking such as Bluetooth or Wireless LAN (also known as WLAN or WiFi). Currently wireless devices comply with 802.11a/b/g standards.

TABLET PCs and INNOVATION



Over recent years, innovation by student artists, designers and engineers has become increasingly stymied by the limitations of inputting ideas to a computer via a PC keyboard and a mouse.

Freeform design has become increasingly impossible.

The stylus system is excellent for applications such as filling out online forms or drawing with art programs.

The uses of charts, such as those needed for refrigeration, psychrometry and air conditioning designs, and nomograms, such as used in combustion calculations, have become defunct.

By allowing the user to input drawing using the stylus, the Tablet PC rectifies these inhibitions, so renewing the possibilities of freeform design and the use of nomograms and charts. The latter however may be a retrograde step as the calculations required to construct the nomograms and charts initially can now be performed in real time on the computer.

The stylus system also makes possible the input of drawings, annotated photographs, graphing, diagrams and networks, such as electrical circuitry, flow charts, Sankey diagrams and plant layouts.

In a teaching environment, a Tablet PC may be used as a replacement for a blackboard to deliver the lectures. Lecture material may be created during a lecture session by writing on the tablet PC connected to a video projection system to display the lecture content to the students attending the class. The lecture files may be saved and placed on a web server for students to have a complete access to the lecture notes outside the lecture theatre through the course web site.

In the traditional lecture delivery mode instructors usually use the chalk and blackboard or they prepare presentational slides. It is a very time consuming process to prepare learning modules that are highly math and graphics oriented. Lecture material may consist of text, pictures, sketches, mathematical symbols and equations. It is difficult, if not impossible, to create this content in digital form using a PC through a mouse and keyboard interface during a live presentation.

This problem can be solved through the use of a Tablet PC, which offers a more natural user interface than the keyboard and mouse. The MS Journal program that comes with the Tablet PCs provides all the necessary tools for controlling the pen movements and the resulting drawings. The line width and colour can be adjusted through the program menus. It also provides erasure as well page numbering functions. The author can flip through the pages by simply pressing on the arrows located at the bottom right corner. The intuitive program interface emulates a writing pad and it is very easy to use. The hand written text can be converted to regular typed text through a handwriting recognition program that is part of it. It is very easy to master the use of this program.

The use of a Tablet PC in the Teaching and learning Process serves the purpose of the blackboard without obstructing the student's view from the instructor leading to a better visibility of the lecture material. Using different colours, the instructor has the choice of highlighting the lecture material for added emphasis and clarity. Thus a combination of Tablet PC with a video projection system provides an improved alternative to chalk and a blackboard. In the presentation method that uses chalk and blackboard the lecture material is erased after the blackboard is full or at the end of the lecture session resulting in the loss of lecture material. By using the Tablet PC, the entire lecture session may be saved in the form of a computer file.

The lecture material may be supplemented by documents, presentations, spreadsheets and videos. The wireless Tablet PC may be connected to the internet during the lecture session. Thus previously prepared course notes may be recalled.

Hyperlinks within the course can then link to the computer files that were created during previous lecture presentations. The course web site can provide anywhere access to the class material on a 24/7 basis.

Standalone courses may be devised for distance-learning purposes and self-assessment. If appropriately constructed, these courses would not require a lecturer, or indeed a tutor. The computer can invite feedback from the student and evaluate the responses.

In summary, the Tablet PC can replace expensive electronic blackboards and white boards in the classroom and may be used for self-learning purposes.

List of all special Tablet PC "added educational" functions/characteristics over and above the capabilities of the Laptop PC.

- Use of the stylus for "mouse" operations
- Capabilities of being written on through the use of a digitising tablet
- MS Journal Notes.
- Handwriting recognition
- Voice-recognition.
- Wireless networking (although Laptop PCs can also work wirelessly).
- Drawing and Freeform design
- Filling out online forms
- Using Charts
- Using standalone courses for distance-learning purposes and self-assessment.
- "On the hoof" lecture material creation during a lecture session by writing on the tablet PC connected to a video projection system to display the lecture content to the students attending the class and saving notes to the server for the students to access later through the course website.
- Recalling previously prepared multimedia materials from the intranet/internet.
- Inviting feedback from the students.
- Evaluating the responses from the students electronically.

E-Books and E-Textbooks

According to Webopedia (webopedia.com) an **electronic book (E-book)** is an electronic version of a paper book.

Many so-called "E-books" are electronic versions of previously published and printed books. Usually one can download and read on screen an e-book using a free programme, such as Adobe Reader. The book can be read on the screens of desktop computers, laptops, Tablet PCs, E-book readers (specialized e-book reading devices), or Personal Digital Assistants (PDAs). Some software producers offer programs making reading e-books on screen more like reading a paper book. They feature the ability to "turn pages", as one would with a regular book. Commercial content brokers (ebrary, netlibrary, Academic Materials) are making a wealth of digital texts available in this form (mostly for libraries), often with links to supplementary materials.



E-Book Formats

The e-books available for sale are usually offered in several different formats. In fact, the proliferation of different -- and mutually incompatible -- e-book formats have been one of the major inhibitors of more widespread acceptance. While e-books can be created in formats such as plain text or HTML, which are non-proprietary, universally accessible, and easy to produce, these formats do not offer much flexibility in terms of display, organization, and searchability. Nor do they provide for the digital rights management (DRM) publishers demand.

The formats most used today by commercial e-book providers are Microsoft Reader, Adobe eBook, and Palm Doc. All provide for rights management and restricted access (although managed in different ways), and allow for sophisticated formatting and display options. New font technologies employed by Microsoft Reader (ClearType) and Adobe (CoolType) enhance considerably the screen legibility of text. However, both are proprietary formats incompatible with each other and usable only on specific hardware running Microsoft Windows. This is true as well for other formats such as Gemstar or hiebook. The document type which is most widely supported across platforms and devices is Palm Doc, which uses a plain text format, thus limiting display options.

Since 1999 there has been an initiative underway to create a common format for e-book readers, the "Open eBook publication specification" (OEBPS) created by the Open eBook Forum, a membership organization consisting mostly of large companies and publishers. The Open eBook format is based on open standards, namely XML (extensible markup language). An OEBPS converter for a free hypertext reader, Plucker, has been developed. Plucker is an e-book (and offline Web) viewer for handheld devices that supports Windows, Macintosh, and Unix. Production tools for Open eBooks are being developed through LiberGNU, a free software development project for the Open eBook standard.

One of the challenges for the Open eBook project is rights management; efforts are being directed toward developing standards that allow the same usage rights for consumers no matter who is the publisher or software vendor. It will of significant interest to language teachers and humanities scholars if tools can be developed to enable interchange between the Open eBook standard and the new XML-based format for the long-running Text Encoding Initiative (TEI). A large number of language corpora, archival materials, grammars, and literary texts are encoded in TEI, including texts in 33 different languages. Making selective TEI texts available as Open eBooks would provide a potentially rich resource for language learners and researchers.

Many hardware e-book reader products have been marketed (e.g. the Rocket eBook, from Nuvomedia (www.nuvomedia.com) and the SoftBook (www.softbook.com)). These are small computers the size of a paperback book with backlit screens that allow a user to read, save, highlight, bookmark, and annotate text. They can download books from a website, such as (e.g. barnesandnoble.com).

But any e-book may be read also on a desktop, laptop/notebook or Tablet PC with the appropriate reading software.

The introduction of the Tablet PC, has sparked renewed interest in electronic texts or e-books. This new hybrid of laptop computer and the PDA (personal digital assistant), which features a writing tablet and stylus-based input/navigation, offers compelling advantages for reading and writing texts, including interesting possibilities for working with non-Roman writing systems. The addition of wireless networking, integrated into most models, provides intriguing opportunities for collaborative and classroom use.

Electronic versions of texts have a long history in the digital age. Michael Hart began his Gutenberg project in 1971, with the goal of creating a widely-available library of texts of all kinds in plain text format. Similar Gutenberg projects have since been introduced in other countries, notably in Germany and Australia. Electronic text centers, such as those at the University of Virginia and Columbia University, have created extensive collections of electronic texts accessible over the Internet. There



have been longterm projects for making available digitized versions of texts other than English, such as the ARTFL French literature project or the Perseus classics collection.

In the mid-1990's, the exponential growth of the Internet and the introduction of new formats and devices for reading texts created media buzz about e-books with predictions of the imminent demise of the printed page. Subsequently, however, disappointing sales, the dotcom bust, and the failure of experiments such as Stephen King's serial publication of *The Plant* dampened enthusiasm for the promised revolution in publishing.

E-book vendors and apostles, however, continue to tout the supremacy of digital over print texts, emphasizing the ability to search and annotate, the portability (thousands of texts on a disk), and the instant access (through downloading). For many consumers these benefits do not outweigh the major drawback of e-books - the user-friendliness and familiarity of print when compared with electronic devices. For most people reading a text on paper is always preferable to reading the same text on a digital display of any kind. The availability of desirable texts has been another problematic issue. What is widely circulated for free on the Internet are works in the public domain, not current bestsellers (although bootleg copies abound). The recent extensions of copyright in the United States and Europe further limit copyright-free texts. Given the experience of the music industry, publishers have not been eager to release their lists in digital format, for fear of Napster or Gnutella like distribution of copyrighted works.

Software companies and e-book vendors have in recent years found ways to restrict usage of purchased ebooks which satisfy many publishers. As a result, e-book titles of many recent publications are now offered for sale on amazon.com and Barnes and Noble, both of which have recently experienced significant growth. Many on-line vendors of e-books have experienced fast growth in the past years.

E-Book Standards

E-book publishing using e-book readers, both devices and software, are following a different track. Both think about content as a digital object that is moved from place to place and that represents something intellectually closely akin to a printed book. One model is to define a subset of HTML/XML that includes text and some limited multimedia components. The other model is to use Adobe PDF, which can work at a page image level.

As predicted, standards in e-book publishing have stabilized and it is not hard to translate existing digital books that are representations of printed books into one of the standard formats for loading into e-book readers, or to move from one reader format to another.

The Open eBook Forum (OEBF) is established as a leading international trade and standards organization for the electronic publishing industry – heavily dominated by US publishers and hardware and software companies including Microsoft and Adobe. OEBF also incorporates the Electronic Book eXchange (EBX) System. While the OEB provides a specification for representing the content of electronic books intended to give content providers and tool providers minimal and common guidelines which ensure fidelity, accuracy, accessibility and presentation of electronic content over various electronic book platforms, the EBX System defines the way in which e-books are distributed from publishers to booksellers and distributors, from booksellers to consumers, between consumers, and between consumers and libraries.

E-books/E-textbooks in Education

There are many advantages of electronic books in comparison to paper books. First, their delivery time is immediate – a 'click' away – in contrast to the traditional or electronic delivery canals. Second, their 'print run' never gets out of print. Yet another advantage of electronic books is their 'portability'. Even the largest electronic books take up little space in the memory of the portable e-book readers or



computers (desktop or portable), and vast libraries and collections of e-books could be easily transferred over the Internet to different locations anywhere in the world or be ‘carried’ by the users.

The option for fast and easy ‘search’ for specific content, phrase or word is another advantage without an existing analogue. Inserting hyper links similar to those in the World Wide Web into the text allows adding to the content interactive (dialogue) functions. The book content itself could be enriched with multimedia elements – sound, video and animation, which cannot be accomplished with traditional paper books. **Thus e-textbooks can be created easily including rich multimedia and interactivity (tests, quizzes, simulations, etc.).**

There is no doubt that Tablet PCs and e-books/e-textbooks open a new frontier in the field of teaching and learning technology today.

For those who don’t have access to Internet, electronic books could be published on data-storage devices (diskettes, CD-ROMs, etc.) and in this way everyone will have access to them. It is also very important for the consumer that the production cost of electronic books is much lower than that of paper ones. And there are no costs for expensive transport to warehouses/book-shops or trade centres. Here we should mention that electronic books are ‘ecologically sound’. There’s no need to cut down trees, to pollute the environment in the process of paper production and use chemicals in polygraphy for the creation of e-books.

Up to 200 000 standard text pages could be published on one single CD-ROM, which is eloquent testimony to the fact that huge economies of paper could be made, and consequently, a great number of trees could be saved from felling.

Another extremely important characteristic of electronic books is that the process of publishing them accumulates ‘content’ (textbooks, reference books, tests and etc.) on the internet, which is the natural basis for proceeding to new educational models such as distance (non-attendance) training/self-education over the Internet through modern information and communication technologies.

Internet compiles substantial content and turns into a vast digital library accessible to all knowledge users. It becomes a place where the scientific and cultural heritage of society could be gathered and preserved.

E-books offer enormous potential as teaching and learning tools but not merely as electronic “paper books”.

The text can be transformed into powerful didactical tools by the addition of :

Hyperlinks to reference works (on-line dictionaries, encyclopedias) and Web sites.

Graphics

Sound – music and voiceovers

Videos

Simulations

Interaction

Quizzes

Games

Computer Assessment

Feedback

The Features of E-Books

- Can be read on the computer
- Can contain multimedia and hyperlinks
- Can receive free updates by the author
- Can bookmark relevant websites
- Can be specialised for learners with educational difficulties



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- Can be purchased cheaply
- Can be downloadable in seconds
- Can be printed out for hole classes
- Can contain tests, assessment tools and assignments.
- Can be taken home on diskettes, CDs or memory cards and sticks.
- Can combine curriculum with chat forums/discussion groups

The Benefits of E-books

- Can save time combining technology and curriculum delivery
- Can save time as structured learning is already in place
- Can save money
- Can make learning more interactive and visual for students
- Can save countless hours surfing the Internet
- Can access knowledge immediately
- Can be reprinted ... endlessly
- Can be more proactive with students and parents
- Can let students work on material at home doing Internet research
- Can give student help and feedback – homework, research, tests, feedback
- Can promote working together on a unit with other classes around the world
- Can navigate easily
- Can allow for creative freedom.

Positive Features of E-Books

- Improves on-screen reading experience when compared with lecture notes in paper format or slide presentations or Web pages.
- The possibility of imitating actions used on printed notes, such as highlighting, bookmarking and annotating, is very useful and helpful.
- Accessing links from within the text is very useful.
- Compiling an assignment in an e-book format, with a cover and table of contents, improves presentation.
- Students could store their collections of assignments (in the e-book form) in the personalised digital library provided in the reader, thus saving physical space as well as increasing the portability.
- By the end of their course, many e-books would have been created, thus improving the electronic authoring experience and promoting self-publishing.
- Lecturers' comments (in digitised hand writing form and attached notes) included in the marked assignment give students a "sense of the lecturer's personal touch" on their work. In addition, students could read and identify the strengths and weaknesses of their work, from the lecturer's point of view. This "personalised" touch is one of the traditional interaction methods in the education environment, but is either difficult or not possible in other submission-return methods for electronic assignments.
- Lecturers' responses and comments on students' work are delivered faster via the Internet.

Negative Features of E-Books

- Even though multimedia capabilities are not considered crucial to adult learners, the need is there, especially when complex concepts are to be explained in distance education. Currently, e-book technology (i.e. either hardware or software based readers) has limited multimedia features.
- Reading online is still not as comfortable as printed text. But when the new display technologies (as E-ink Electronic Paper Display technology) come to all portable devices this may change.

- The portability of software-based readers is not as good as for hardware readers, but Tablet PCs and hardware-based readers are still too expensive for students.

The conclusion from the MENUET Study Survey is that, whilst the use of E-Books and E-textbooks are considered to be capable of promoting a major revolution in teaching/learning processes, many are simply “paper books” in digital form.

The problem is that there is at present no proper infrastructure for the preparation, marketing and selling of E-textbooks, the market still being entrenched in conventional publishing.

E-textbooks must break the link with printed books and conventional publishing systems, where an author may get 5% commission on the sales of a paper book.

An e-textbook is not a digitised paper book but an entirely different animal, the best material to date being supplied by the entertainments industries and not conventional publishing.

Its content must "come alive."

The revolution needs a new type of E-Book which harnesses all the power of the computer in producing multimedia “edutainment.”

An E-book should not follow the form of traditional paper books but must be the dynamic stage of an electronic theatre or the screen of an interactive cinema.

If the love of music, video, computer games and quizzes can be harnessed to serve didactical purposes, new and powerful form of education and training will be created.

The three major factors that are slowing the uptake of e-learning in education and life-long learning are

- (1) The inertia to organisational changes required to implement it effectively and efficiently
- (2) The lack of exemplary quality multimedia learning resources.
- (3) The lack of a unified integrated framework within which to evaluate its pedagogical and didactical benefits.

Teachers and trainers are not accustomed to producing e-learning materials but sometimes commission external software engineers to “translate” traditional teaching materials into e-learning format.

This dependency must be broken. Teachers and trainers must themselves produce pedagogical materials in multimedia format, which include

Hyperlinks
Graphics
Sound – music and voiceovers
Videos
Simulations
Interaction
Quizzes
Games
Computer Assessment
Feedback



Lifelong Learning Programme



**MENUET – Mobile E- Novative Use of
E- learning Technologies
Project No. LLP-LdV/ToI/2008/RO/010**

The survey of E-Books revealed not one example of a successful (i.e, in demand and money-making) E-book which contains all these elements. The existing E-Book authoring packages are clandestine and restrictive, so inhibit creativity and innovation and deter educators from producing multimedia E-Books.

The MENUET Project will construct a simple E-Book Authoring System that uses only the commonly available

HTML
WORD
EXCEL
POWERPOINT
JavaScript
VBScript

to produce dynamic E-Books containing

Hyperlinks
Graphics
Sound – music and voiceovers
Videos
Simulations
Interaction
Quizzes
Games
Computer Assessment
Feedback

A Step-by-step Guide to the development of these dynamic E-Books will be constructed and included in the final version of this Guide.