

# A Methodology for e-Learning Scenario Development: The UNITE Approach

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**Abstract:** In the framework of the FP6 project UNITE a number of e-Learning scenarios have been developed, covering different educational contexts, pedagogical concepts and subjects (environmental education, ICT, language learning, etc.), bridging thus the gap between formal and informal learning settings. All e-Learning scenarios have taken into consideration the diverse cultural and educational backgrounds of the school environments they would be implemented in.

The scenarios follow a constructivist approach and promote the inductive and deductive way of learning, as pupils are encouraged to categorize, test structures and apply the knowledge obtained to new situations. These scenarios promote and support problem-based learning, where pupils can be creative, learn how to combine knowledge from different thematic areas, can think critically, analytically, and learn how to solve real problems. Besides pedagogy, scenarios highlight the strengths of UNITE platform itself enabling both in-school and out-of-school activities (also through m-learning).

The scenario development process followed in UNITE has included a number of stages that are discussed in this paper. Namely the design of a scenario map based on which e-Learning scenarios emerge, an e-Learning scenario template to structure scenarios in a consistent manner, a number of scenario examples to serve as guides, two handbooks (namely Teacher's and Content Development) to aid teachers, as well as formative and summative evaluation. Teachers were actively involved from the early stages, by being consulted, providing feedback and input in many topics. The UNITE approach for scenario development is in fact a user centered approach; the teacher sets the learning objectives of his/her lesson, designs the learning activities, prepares the content that he/she needs, chooses the tools he/ she will use, defines the assessment strategy he/ she will follow, and designs the e-Learning scenario taking into consideration the needs of his/her class.

**Keywords:** e-Learning scenario, methodology, development, e-Learning scenario template

## 1. Introduction

UNITE: Unified e-Learning environment for the school (<http://www.unite-ist.org>), an IST (Information Society Technologies) project partially funded by the European Commission under the 6th Framework Program, aims to bridge the gap between formal and informal learning settings implement innovative e-Learning scenarios, promote interdisciplinary learning, enhance learning experience and create a virtual Network of Schools through which students work, cooperate and interact with each other. The structured methodology, the stages through which e-Learning scenarios are developed and the first results, namely the scenarios within the framework of UNITE project, will be presented in the following sections aiming at illustrating how a scenario is designed and what the teachers' involvement is in the procedure.

## 2. Methods and processes

Certain steps were followed aiming at delivering innovative e-Learning scenarios, taking a step forward, beyond the state of the art in scenario design and initializing a user centered approach; these steps constitute the methodology through which scenarios were developed. This methodology is depicted in Figure 1.

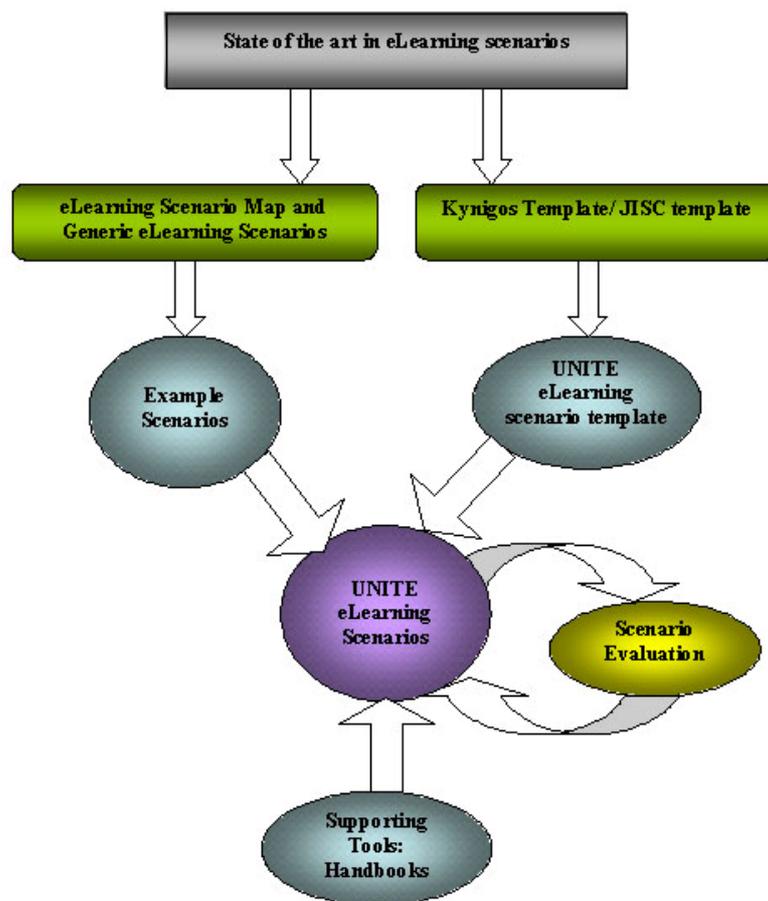


Figure 1: The UNITE e-Learning scenario development methodology

## 2.1 State of the art in e-Learning scenarios

Evans and Taylor (Evans & Taylor, 2005) define scenarios “as stories focused on a user or group of users, which would provide information on the nature of the users, the goals they want to achieve and the context in which the activities will take place. They are written in ordinary language, and are therefore understandable to various stakeholders, including users. They may also contain different degrees of detail.” A learning scenario should involve all the methods that need to be applied in planned activities within classrooms, the roles of the participants/contributors in the learning procedure (students, teachers, school headmasters and administrators) and the kind of the cooperation among different groups (i.e. classroom as whole, small groups of students in the same classroom or in different classrooms). It should be flexible enough so as to be creatively reusable, to allow teacher’s intervention and be adaptable to changes according to the number of students and classes to which is implemented. According to Erskine et al. (Erskine et al., 1997), “in scenario-based design, the first step is that a scenario is written down as a detailed narrative. Next, claims are made about the usability and usefulness of particular artefacts envisioned in the scenario. These claims are also recorded in a manner that maintains their link to the scenarios they analyse. This process of scenario construction and claims analysis is conducted as an iterative cycle. In the end, the accumulated scenarios and claims constitute the design’s description and rationale.” According to Taylor and Evans (Taylor & Evans, 2005) “scenarios support a mutually informing dialogue between technical partners, pedagogues and evaluators.” This why scenarios call for a continuous feedback among them with the view to constantly improving scenarios according to the settled pedagogical objectives, the technical requirements and evaluation delivered by all involved agents. J. Carroll (Carroll, 1999) attributes five characteristic elements to e-Learning scenarios: they include or presuppose a *setting*, they include *agents* or *actors* and each agent or actor has typically *goals* or *objectives*; every scenario has at least one agent and at least

one goal. Finally all scenarios include sequences of *actions* and *events*, things that happen and change the scenario setting.

Within the framework of the state of the art literature review (UNITE Public Deliverable D1, 2006), two scenario templates, namely the Kynigos template (Kynigos, 1995) and the JISC template (JISC template, 2004) were identified as points of reference and relevant to the UNITE project and formed the basis for the delivery of the UNITE e-Learning scenario template, which users (teachers in our case) would use to structure their scenarios.

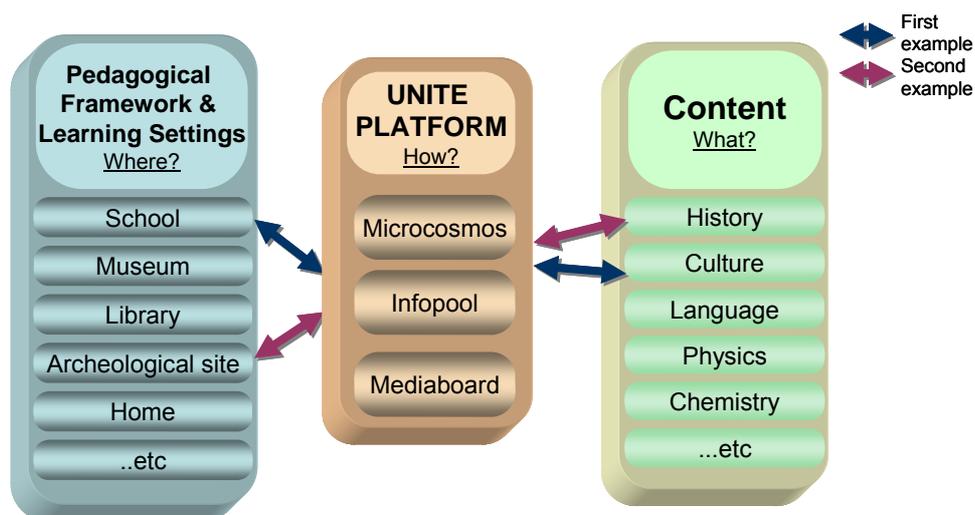
The literature review helped formulate the general approach of UNITE e-Learning scenario development, define the scenarios' components, their characteristics and the participants' roles; this framework was used as background knowledge and first input for the development of a scenario rationale adapted to the UNITE project's standards, aiming at going beyond the current state of the art in scenario design.

## 2.2 UNITE e-Learning scenario map

The UNITE e-Learning scenario map (UNITE Public Deliverable D5.1, 2006) is the general framework of the UNITE e-Learning scenarios and consists of three main parts:

1. The pedagogical framework implemented within formal and informal learning settings, namely specifies the pedagogical approaches that can be alternatively used within UNITE project in formal (school environments) and informal learning settings (museums, archaeological sites, libraries etc) aiming at defining the different learning settings of UNITE implementation. Teachers, as UNITE end users, decide which learning settings they want to connect in each learning scenario they design- taking always into consideration a series of unique parameters for their class- so as to chose the pedagogical approach that best suits to the learning needs of their class, the contexts where the scenario will take place and the learning objectives they aim to accomplish.
2. The definition of the e-Learning environment, namely a description of technology (UNITE platform itself and the technological tools supported) that will facilitate the implementation of the e-Learning scenarios.
3. UNITE content specifications, i.e. an outline of the most important requirements that should be met when developing content for the UNITE scenarios.

The scenario map constitutes the general blueprint of UNITE e-Learning scenarios, it defines the scenario components and how the user should work when designing an e-Learning scenario.



**Figure 2:** UNITE e-Learning scenario map. Figure adapted from (UNITE Public Deliverable D5.1, 2006)

### **2.3 Generic e-Learning scenarios and scenario examples**

The UNITE e-Learning scenario map led to the delivery of three generic e-Learning scenarios (UNITE Public Deliverable D5.1, 2006), which define how the users' (teachers' in our case) requirements can be integrated and met through the UNITE platform. A user-centered approach is followed: teachers consult the scenario map, set the learning objectives they aim to accomplish, the pedagogical approach they will choose, identify all parameters i.e. where the learning scenario they design will take place and why, how it is related to the curriculum, which learning objectives will be covered, which learning resources they will need and finally decide which generic e-Learning scenario fits in with their requirements. Three types of generic e-Learning scenarios have been identified:

- **1st type:** groups of users may communicate, interact and collaborate via the UNITE platform from their PCs/ laptops at home, at school, or from any place with PCs/ laptops and Internet access. Pupils studying from home may send their teacher their assignments, queries and cooperate, chat and/or discuss with their classmates – who may also be at home or elsewhere working on their PC/ laptop.
- **2nd type:** groups of users may communicate with each other through the UNITE platform, some of them being inside the classroom, or elsewhere with PCs/ laptops and Internet access and some others being outside the classroom using their PDAs. For example a class may participate in an educational visit – a visit to a museum or a place of scientific/ archaeological interest, share its learning experience with their classmates back to school, send them photos, videos etc. and enjoy real time communication through UNITE platform.
- **3rd type:** groups of users may communicate with each other through the UNITE platform using their PDAs. For example a class visiting a place of archaeological interest may split, half of them may visit the monument and the other half the museum related to the monument e.g. Acropolis and Acropolis museum and may use UNITE platform as the medium through which they may communicate, work together, participate in an educational game.

In all the aforementioned types the user sets the scenario parameters that are integrated within the framework of the generic scenarios and decides which type fits better with the pedagogical objectives he/ she wants to accomplish. In all types of generic scenarios a Virtual Network of Schools is created where pupils can communicate, cooperate with each other and share their learning experiences; learning is possible everywhere, at any time and is no more regarded as being limited within classroom walls.

Along with the three types of generic e-Learning scenarios, scenario examples were delivered in the UNITE e-Learning scenario template (see section 2.4), so that teachers get a first impression of what is meant by UNITE e-Learning scenarios and thus become able to create their own. Teachers could choose to either adjust the examples of the e-Learning scenarios to their own national requirements, or create their own scenarios.

### **2.4 UNITE e-Learning scenario template**

The development process of an e-Learning scenario is very important because it refers to the codification of the scenario itself, after which it can be implemented in the school environment and potentially or perhaps ideally be reused by others. The quality of this codification, i.e. how well the scenario is described and documented is directly related to how successful the scenario will be with respect to its reuse by others, its flexibility in implementation, etc.

Therefore, it is fundamental that an appropriate solution for capturing is carefully selected. From the State of the Art analysis performed, two solutions were identified that qualified as candidates for UNITE and that had things to offer, that would however have to be adapted to the project's particular needs. These were the Kynigos template (Kynigos, 1995) and the JISC template (JISC template, 2004). The first one follows a narrative format and thus is easier for someone to create, whereas the second is in a structured tabular form with fields to fill in and so more detailed but time-consuming. The two of them were studied in relation to UNITE, leading to the creation of a hybrid solution: the UNITE e-Learning scenario template, which is described in

**Table 1.**

**Table 1:** The UNITE e-Learning scenario template

1. Curriculum area
1.1 Subject/discipline area
1.2 Context/level of study
1.3 Topic/domain
1.4 Pre-requisite skills/ knowledge
1.5 Pedagogical Approach Brief description of the general pedagogical approach that will inform practice in the scenario outline in section 2. It refers to the theoretical underpinning channeling the modes of delivery and the learning activities that will follow e.g. Constructivist approach with particular focus on problem- based learning or experiential learning ... etc.
2. Pedagogic Activities
2.1 Learning Activities The learning scenario should be outlined as a sequence of activities (i.e. a narrative) including information about what different actors (e.g. students, teachers) are doing at each stage. The way in which activities address learning objectives i.e. the modes of delivery should be clear, and this should be consistent with the overall approach specified in section 1.
2.2 Learning objectives/ outcome(s) These should be stated in terms of one of the four categories: knowledge (facts), understanding (concepts), skills and attitudes/values. They can be taken directly from prescribed schemes of work where appropriate.
2.3 Tools/ Resources Any physical/virtual tool (hardware, software) or resource (e.g. textbook) can be specified here. E- /M-learning resources in particular should be described in some detail
2.4 Assessment Strategy (Feedback and/or Evidence) With an emphasis on formative assessment key activities should be selected. Assessment strategies might include peer-commentary, the use of e-portfolios, self generated success criteria, photographic records
2.5 Time allocated

The template was polished and revised, primarily based on the UNITE pedagogical framework, before its final version was developed. The scenario template consists of two parts: the first one (see section 1 in

**Table 1**) is related to the curriculum area and the second one (see section 2 in

**Table 1**) with the pedagogical activities planned to take place during the scenario implementation; each pedagogical activity is matched with a learning objective, the tools/resources the teacher plans to use, how he/she is going to evaluate each learning activity and how long it is going to last. The template aims to help teachers organize their e-Learning lesson in the most efficient way and have an overall view of the steps they are going to follow.

## 2.5 Evaluation of scenarios

Teachers of UNITE Network of schools designed their scenarios – either new ones or customized versions of the scenario examples- and delivered them in the UNITE scenario template. Both formative and summative evaluation was performed, or has been planned. An iterative process of evaluation followed; scenarios were evaluated by the consortium's experts in Pedagogy, Technology and Content Development and teachers received feedback in order to improve their scenarios. Teachers in cooperation with their local UNITE partners delivered an updated version of their initial scenarios having integrated the experts team's comments and suggestions and scenarios were sent again to the experts' team before the final delivery. This internal evaluation approach was regarded as necessary, given that teachers were not familiarized with the UNITE platform and tools and the experts' feedback functioned as an evaluation mechanism, so that scenarios planned to be implemented were in accordance with UNITE standards in terms of Pedagogy, Technology and Content Development. On the other hand experts' feedback and interaction with teachers turned out to be the 1<sup>st</sup> semi-structured training course in the UNITE project, a training course that was further widened and structured in the scheduled 'UNITE Teachers' Training Workshop': all teachers from the Network of Schools received some form of

training on the topic of scenario development: either local training by their UNITE partner, or through attendance of the UNITE workshop organized in the UK, during which teachers had the chance to cooperate with each other, work on the UNITE scenario template and design collaboratively learning activities of their learning scenario.

Currently we are at the stage where scenarios are being implemented in class with the support of the UNITE Platform. Evaluation activities are also planned (mainly after implementation) to reflect on the scenarios that were in fact implemented in class, as well as the platform itself with respect to usability. It is anticipated that the results produced in this final stage will point out scenario weaknesses, practical problems in their implementation in class, etc. and will eventually be used to improve the scenarios so that they can be reused in the future.

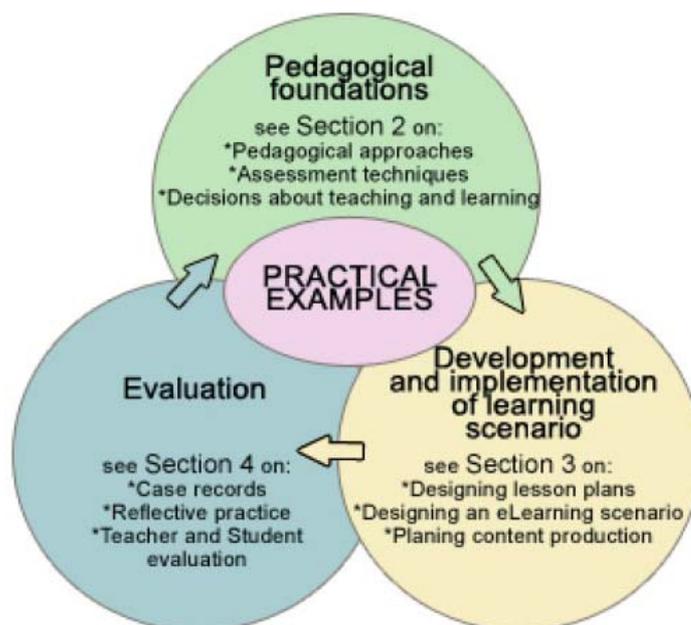
### **3. Supporting tools**

#### **3.1 Teachers' handbook**

It was decided that since it is undoubtedly essential that strong emphasis is placed on the underlying pedagogical principles and educational goals to be served while developing and implementing e-Learning scenarios, a handbook to support this process would be valuable. That led to the creation of the UNITE Teachers' Handbook (UNITE Public Deliverable D4.2, 2007).

This UNITE Teachers' Handbook is a practical step-by-step guide for teachers providing instructions on how to implement the UNITE platform/system and apply its features in real and practical contexts, inside and outside the classroom. The guide shows the pedagogy behind the scenarios and helps teachers to shape learning objectives and to decide how they are best met by certain learning materials. It provides a guide to some of the active learning pedagogical approaches that teachers can use with UNITE, information about how assessment can support learning and some practical online technical support. There are also some in the classroom case studies to show how UNITE can enhance learning in the classroom and beyond.

Figure 3 depicts the constituents of the Handbook. Pedagogical approaches and assessment methods are combined based on the particular learning environment, content, learners and curriculum. These decisions form the basis for the development and implementation of the e-Learning scenario, a process for which guidelines are also included. Finally the several means for evaluation of the scenarios developed are described, and cases where they can be applied are presented.



**Figure 3:** Teachers' Handbook Constituents (UNITE Public Deliverable D4.2, 2007)

### **3.2 Content development handbook**

e-Learning content otherwise referred to as e-Learning resources or e-Learning objects, is any digital resource that can be reused to support learning. The fact that non-digital resources can only be used by one person at a time, whereas digital ones can be used by many and simultaneously, has tremendously changed things in education. One can access many e-books or other resources on the web and at the same time another 100 users (and more) can do the same. This has revolutionized the way we teach and learn: both are possible without students physically meeting with their teacher. Resources today are not restricted to simple, lifeless text – they can be interactive, with multimedia, allowing the learner to get a better understanding of the concepts taught, even when learning on his own.

There are several categories of professions/functions that deal with e-Learning content in one way or another. Some include: content designer/developer, subject matter expert, instructor/ teacher, end user/ learner. A Content Development handbook (UNITE Public Deliverable D5.2 (Part 2), 2007) was created within UNITE, intended for the users who create e-Learning content regardless of their profession, but referring in several instances to the specifics of the UNITE platform. In most cases UNITE content developers will be teachers that are members of the UNITE Network of Schools. e-Learning content is to be used by learners to learn and for teachers to teach. It is absolutely essential that, apart from the underlying pedagogical principles and educational goals to be served that are supported by the Teachers' Handbook, teachers place strong emphasis on the learning content's technical features.

Decisions about the development of learning content e.g. design decisions, factors to consider, available resources etc. are addressed in the Content Development Handbook.

This handbook's scope is to give the reader an overview of what e-Learning content is all about, along with useful guidelines to develop reusable e-Learning content from a more technical point of view – at the same time not requiring many technical skills. This handbook's goal is not to provide guidelines on how to use software packages – rather it gives general e-Learning content development guidelines, bearing in mind that it will be in most cases developed by teachers who have no prior experience.

## **4. Scenarios developed**

Teachers used the material produced in the previous phases, so as to be able to either customize to their own needs the scenario examples or create their own scenarios. Teachers' Handbook (UNITE Public Deliverable D4.2, 2007) and Content Development Handbook (UNITE Public Deliverable D5.2 (Part 2), 2007) were used as a point of reference so as to guide teachers design e-Learning scenarios tailored to the needs of their classroom.

Six e-Learning scenarios (UNITE Public Deliverable D5.2 (Part 1), 2007) delivered by teachers were the first results of the UNITE scenario development methodology. Teachers delivered customized versions of scenario examples, as well as completely new scenarios. They set the pedagogical objectives, designed the learning activities, created content for their scenarios, planned to be implemented in their classroom, organized the learning activities and structured their scenario according to the scenario template.

It was recorded during interview sessions that were held with teachers, that 32 scenarios will be developed and implemented by the schools that take part in UNITE project, namely UNITE Network of Schools, and at the same time an average of 32 teachers will participate. Teachers were free to decide whether they would adapt one of the existing scenarios, or create their own. Interestingly, 24 of them decided to customize an existing one and 8 decided to create their own.

In the following tables the curriculum area (see **Table 2**) along with two learning activities (see **Table 3** and **Table 4**) from a scenario implemented within the framework of the UNITE project are presented, aiming at demonstrating how a scenario is structured and presented in the UNITE e-

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Learning scenario template. The scenario that has been selected is devoted to Environmental Education; it promotes interdisciplinary learning and takes place inside the classroom and in a “Water-Mill” museum. Within the framework of the scenario pupils visit the museum and relate what they had been taught until then (e.g. hydroelectric energy, renewable energy resources etc) with real life and physical phenomena (e.g. water mill, water as a renewable energy resource etc). The first learning activity (see **Table 3**) is an introductory one, where the teacher initiates his/her pupils to the course and UNITE platform.

**Table 2:** Environmental Education scenario- curriculum area

1 Curriculum area	
1.1 Subject/discipline area	Physics education; it should be noted that within the framework of physics education curriculum pupils of primary education (7-12 years old) are taught physics, chemistry and environmental education. The objective purpose of physics education is to familiarize pupils with physical phenomena, develop environmental awareness and respect towards nature
1.2 Context/level of study	Primary education, the scenario is implemented in the penultimate grade of the primary school; pupils are 10-11 years old. A class of 15 pupils participates in the scenario implementation
1.3 Topic/domain	Water- Energy (chapter 5 of the national course book; it includes the following subchapters: 1. Water on Earth, 2. where do we use Water- Water as an Energy resource, 3. how we purify Water, 4. Water pollution, exercises and experiments that pupils can conduct)
1.4 Pre-requisite skills/ knowledge	Learners should be able to improve their own learning and performance, solve problems, and work with other people (pupils have already been accustomed to conducting simple experiments, working in groups, participating in hands-on activities). Learners and teachers should be ICT literate as well.

**Table 3:** Environmental Education scenario- introductory learning activity in classroom

2. Pedagogic Activities	
2.1.1 Learning tasks/ activities	Teacher initiates pupils to what she is going to teach through an introductory discussion. He/ She uses the traditional course book and teaches chapter “Water”. The teacher shows to pupils a map of the world or the globe and asks them to observe to which extent the surface of the globe or world is covered by water.
2.1.2 Learning objectives/ outcome(s)	Raise learners’ interest towards the environmental protection and significance of water Make pupils realize that water sustains life on Earth
2.1.3 Tools/ Resources	Traditional course book, world map, globe, Whiteboard Teacher creates a workspace, i.e. a virtual space, in the UNITE platform under the name “Water - Energy”, he/she uploads all educational material to the UNITE repository (texts, assignments, photos, relevant links etc). He/she subscribes pupils’ groups to this workspace so as to have the permission to navigate themselves in the uploaded material, download material, post their assignment and queries to their teacher, chat with their classmates etc.
2.1.4 Assessment Strategy (Feedback and/or Evidence)	Oral questioning and discussion between pupils and teacher
2.1.5 Time allocated	20 minutes

The second learning activity (see **Table 4**) takes place in the “Water- Mill” museum, which pupils visit within the framework of an educational visit. By using their PDA devices they may connect to UNITE platform, communicate with their classmates in the museum and in classroom, share their learning experience, participate in a collaborative task and take part in an educational game.

## 5. Conclusions

The UNITE e-Learning scenario development methodology offers a step by step approach to scenario design and equips teachers with all the means and supporting tools they need so as to develop their own scenario. The approach has taken into consideration parameters that should be

included in scenario design (pedagogical framework, technological specifications, resources, special characteristics of formal and informal learning settings etc) and led to the delivery of a consistent framework, flexible enough to be adapted to each classroom's needs. In the scenario methodology, presented in the previous sections, the teacher has a central role, he/ she is the one that designs a learning scenario tailored to his/her classroom and structures it to the scenario template so that it can be smoothly implemented in classroom. The UNITE scenario development methodology goes beyond the state of the art in learning scenario design, providing teachers with comprehensive tools (scenario examples, supporting tools, scenario template) backed up by a structured and well defined theoretical framework ready to be used in the school environment; the combination of theory and practice and their integration in the UNITE scenario development methodology constitutes the most innovative characteristic of this approach.

**Table 4:** Environmental Education scenario- learning activity in “Water-Mill” museum

2. Pedagogic Activities	
2.2.1 Learning tasks/ activities	Classroom arrives at the museum and it is separated in 3 subgroups consisting of 5 pupils each. Pupils undertake the role of researcher in the museum. The 1st group is asked to take photos of the fauna, the 2nd of the flora of the place and the 3rd is asked to take photos of the water mill. Members of the subgroups take the photos and discuss which of them will be sent back to their classmates in the classroom.
2.2.2 Learning objectives/ outcome(s)	Pupils should see and study in real time phenomena which till then had the chance to see only in the pages of their course book
2.2.3 Tools/ Resources	Pupils use their PDAs / mobile phones and upload via MMS their photos and messages to UNITE platform, under “Water- Energy” workspace. They participate in an educational game by posting to their classmates questions related to what have been taught. They communicate with each other by using the chat tool of the platform so as to ask questions and comment on what they see
2.2.4 Assessment Strategy (Feedback and/or Evidence)	Oral questioning and discussion between pupils (in the museum and in the classroom) and teacher
2.2.5 Time allocated	20 minutes

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## References

- Carroll M. John, (1999) “Five Reasons for Scenario- based Design”, Proceedings of the 32<sup>nd</sup> Hawaii International Conference on System Sciences, Volume Track 3 [online], <http://csdl2.computer.org/comp/proceedings/hicss/1999/0001/03/00013051.PDF>
- Erskine E. Lewis, Carter- Tod R. N David, Burton K. John (1997) “Dialogical techniques for the design of web sites”, *International Journal of Human-Computer Studies*, v. 47, i.1, pp.169-195.
- Evans, D., & Taylor, J., (2005) “Pulling Together: keeping track of pedagogy, design and evaluation thought the development of scenarios- A case study”, *Learning, Media and Technology*, Volume 30, Issue 2, July 2005 , pages 131 – 145.
- Evans, D., & Taylor, J., (2005) “The role of user scenarios as the central piece of the development jigsaw puzzle” in J. Attewell & C. Savill-Smith (eds.) *Mobile learning anytime everywhere*, published by Learning and Skills Development Agency, London, UK.
- Joint Information Systems Committee (JISC) template for describing a unit of (e)learning, 2004 [online], [www.jisc.ac.uk/uploaded\\_documents/Describing%20practice%20v12.doc](http://www.jisc.ac.uk/uploaded_documents/Describing%20practice%20v12.doc)
- Kynigos, C. (1995) “We should not miss the chance: educational technology as a means expression and observation in general education”, in Kazamias A. & Kasotakis M. (eds.),

## **The European Conference on e-Learning**

*Greek Education, Perspectives of Reformulation and Modernization*, pp. 396-416, Seirios, Athens, Greece.

UNITE Public Deliverable D1 (2006) "State of the Art Analysis and User Requirements for UNITE", [online], [www.unite-ist.org/portals/0/publications/ExecutiveSummaries/UNITE\\_26964-D1\\_SOTA\\_analysis-Executive\\_summary.pdf](http://www.unite-ist.org/portals/0/publications/ExecutiveSummaries/UNITE_26964-D1_SOTA_analysis-Executive_summary.pdf)

UNITE Public Deliverable D4.2 (2007) (Pedagogical framework implementation report on UNITE-V1) "Teacher's Handbook", [online], [www.unite-ist.org/portals/0/publications/UNITE\\_026964%20D4.2%20Pedagogical%20framework%20implementation%20report.pdf](http://www.unite-ist.org/portals/0/publications/UNITE_026964%20D4.2%20Pedagogical%20framework%20implementation%20report.pdf)

UNITE Public Deliverable D5.1. (2006) "e-Learning scenario map and generic UNITE e-Learning scenarios", [online], [www.unite-ist.org/portals/0/publications/UNITE\\_026964%20D5.1%20e-Learning%20scenario.pdf](http://www.unite-ist.org/portals/0/publications/UNITE_026964%20D5.1%20e-Learning%20scenario.pdf)

UNITE Public Deliverable D5.2 (Part 1) (2007) "First version of specific UNITE e-Learning scenarios", [online], [www.unite-ist.org/portals/0/publications/UNITE\\_026964%20D5.2%20Specific%20e-Learning%20scenarios%20Part%20I%20amendment.pdf](http://www.unite-ist.org/portals/0/publications/UNITE_026964%20D5.2%20Specific%20e-Learning%20scenarios%20Part%20I%20amendment.pdf)

UNITE Public Deliverable D5.2 (Part 2) (2007) "Handbook for Content Development", [online], [www.unite-ist.org/portals/0/publications/UNITE\\_026964%20D5.2%20Handbook%20content%20development%20Part%20II%20amendment.pdf](http://www.unite-ist.org/portals/0/publications/UNITE_026964%20D5.2%20Handbook%20content%20development%20Part%20II%20amendment.pdf)