



**Mobile and Game-based Learning**

**The COLLAGE Project**

**Implementation**



**guide**

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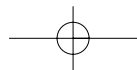
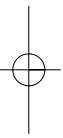
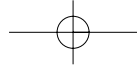
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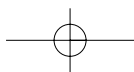
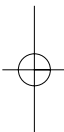
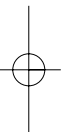
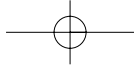
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**For the Teacher**



## For the Teacher

Learning happens in various ways. Students learn in classrooms, but they also learn by exploring streams and parks, trying and failing to perform tasks, talking to friends etc. Actually people learn in many different ways, by experience, by involvement, by talking with peers and experts, or by delving into a practical problem. All of these can be legitimate learning activities. Virtually any experience can be a learning opportunity, but often the resources to make it so are lacking. We are used to thinking of knowledge as something "stored," "held," or contained in a "body of knowledge." That conception lends itself very easily to conceptions of learning as "acquiring knowledge," collecting it from books, lectures, and other media. We are following a different, complementary insight here, that knowledge is something active in situations and contextual in its very nature. Knowledge is something that happens rather than something that is stored and applied when appropriate. The idea of contextual learning is fully supported within the framework of mobile learning applications. It is obvious that for the expansion of the idea of learning and the creation of learning schemes that are based on the effective use of motivation that arises when a student is faced with the stimuli, mobile devices with Internet access can offer significant advantages. Mobile technology actually offers the appropriate educational environment to assist learning activities both inside and outside the classroom. Within this framework mobile learning is translated into flexibility in accessing learning materials but also students and teachers anytime, anywhere.

In this context, the overall aim of the COLLAGE project is to contribute towards an innovative, more flexible approach to e-learning, which will afford a rich pattern of integrated formal, non-formal and informal learning spaces (learning at school, in museums and sites of interest, at home, in the street, during travelling, etc.), through the integration of a blend of technologies (laptops, PDAs, mobile phones, the Internet) into a single learning-supporting and learning-enhancing environment.

COLLAGE project aspires to support the development of a new 'everywhere-learning' and 'lifelong-learning' culture among secondary school students, who will realise that the walls of their classroom do not exist as a barrier between school activities and everyday life, and that learning is related to life in general rather only to schooling.

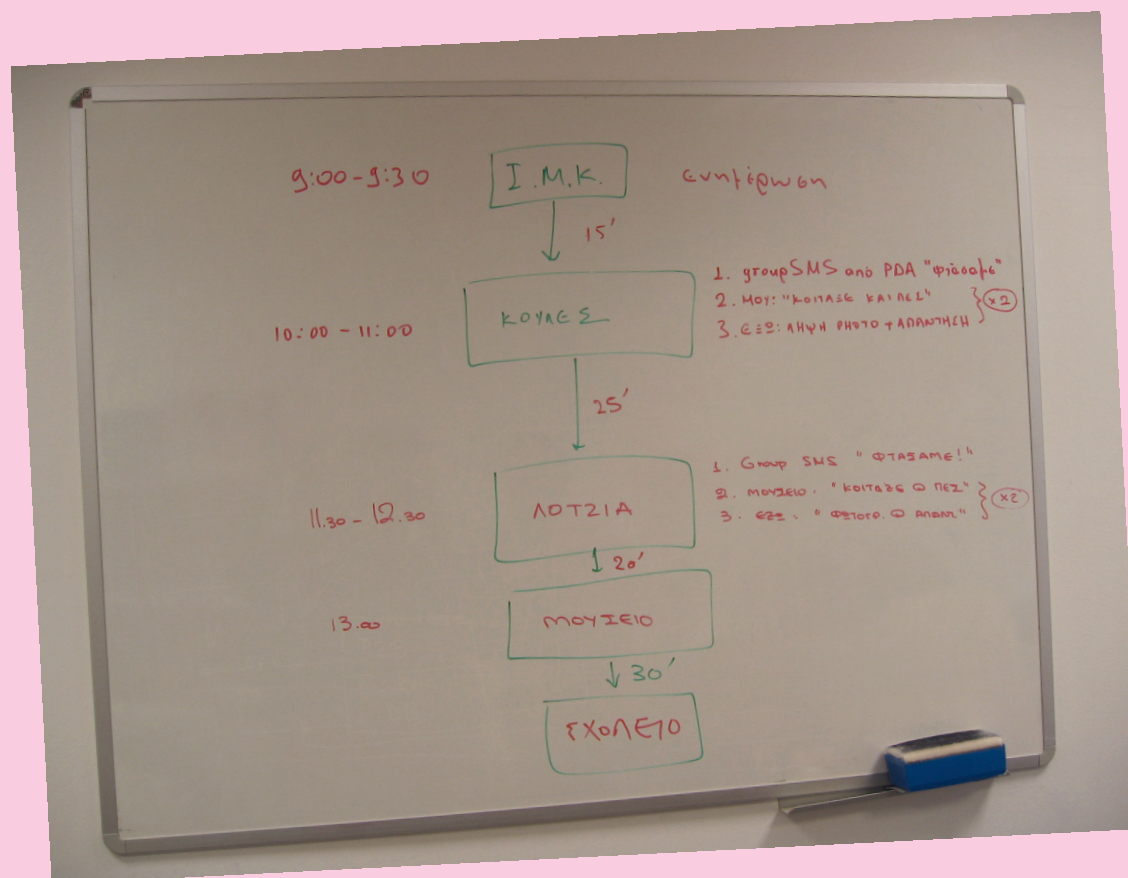
In this integrated mobile learning environment secondary school students learn to gather data from all over around them and interpret it as information useful for learning, either on their own, or, most importantly, through face-to-face and virtual collaboration with their peers. Students, together with and supported by their teachers, learn how to acquire, create, use and re-use e-learning content, which, thanks to mobility afforded by technology and thanks to the transnational aspect of COLLAGE, transcends national borders and reflects the linguistic and culture diversity of the integrated Europe. In this way, students and their teachers have access to a rich source of good quality, multilingual content for e-learning. Most importantly, beside the content which is produced professionally and offered by third parties, libraries, museums, and other sources of knowledge, the COLLAGE learning environment is filled with student-generated content, according to learning activities planned by their teachers. From this variety of co-existing learning content, the same students and teachers, as well as other interested students and teachers, can also select, re-purpose, use and share content with other end-users. In short, COLLAGE offers an integrated, coherent, and practical mobile learning service for learners and teachers, thanks to which they can co-create and manage rich e-learning content effectively, efficiently, and innovatively.

As an outstanding point about COLLAGE methodology, it is also important to note that the test run of the COLLAGE service with students and their teachers will be realized in three different phases so that the results and outcomes of each phase act as input to the next implementation phase. The repeated cycles of implementation are not only meant for evaluation purposes; moreover they will give students as well as teachers the opportunity to actively participate in the design and redesign cycle of the proposed service.

During the first cycle of school activities, the partnership will initiate the application in the school communities. Students' reactions to the COLLAGE pedagogical approach will be monitored and analyzed in detail. With the experience gained and after the appropriate modifications on both the educational tools and on the didactical approach, the partnership will implement the project in the classroom during a second cycle. During this phase students and teachers will follow the constructed lesson plans, by using the already developed tools. The main purpose of this phase is to get both students and teachers familiarized with the new approach and the new tools and prepared them for the final and most important cycle of the student-centered work, the students' projects cycle. During the last phase students and teachers will be able to organize their own project and explore further applications of the handheld devices. The open architecture of the user-interface will allow the adoption of the new ideas in short time. The partnership believes that students can come to view their involvement in this procedure as a craft, which rewards dedication and precision but simultaneously encourages a spirit of creativity, exuberance, humor, stylishness and personal expression. The idea is that in each of these cycles of the student-centered work less guidance is needed incrementally, giving the chance to the students to actively participate to the co-design of the future educational tools.

This book aims to guide the teachers of the COLLAGE project to design, create and evaluate educational games that are adopting the basic principles described above. The book includes 4 main chapters. The first one describes the pedagogical approach of the project. The main principles for the design of effective educational games are presented. The chapter includes a full description of the stages a teacher has to follow in order to develop educational games. The second chapter describes the process for authoring a game with the COLLAGE platform, while the third is providing directions on how the teacher could use the platform tools in order to support the students during the game. Finally the fourth chapter presents the evaluation design and provides guidelines on how the educational activities of the students will be evaluated in the framework of the project.

# **Chapter 1: Pedagogical Approach**



# The COLLAGE Pedagogical Approach

*The future of education is outside education. It is in the everyday life, in the world. The principles can be applied inside formal education. They require a change in thinking, to move toward problem-centered, meaningful activities in the classroom. To exploit students' interests and subvert them to lead to natural, inspired learning activities.*

**D. A. Norman (2001), The Future of Education.**

COLLAGE project emphasises the perspective of game based learning. Modern academic research strongly backs up the idea that when students are engaged in the learning process, they learn and retain more. Engagement may come through emotion, relaxation and especially through fun. Within this perspective, it is obvious that games are a strong motivating and engaging factor.

Game-based learning is one of the main pedagogical principals that will form the basis for the design and development of the COLLAGE project's pedagogical framework. Within the COLLAGE project's framework students will participate in a series of entertaining and fun activities, a series of web based games. In the partnership's vision the engagement of the students in a game context will motivate them to learn and, furthermore, will make the learning results stable. By placing a game at the core of an interactive, learning environment, the use of the COLLAGE platform will provide students with the opportunity to participate in an active learning process, enabling them to gain knowledge and skills beyond 'traditional' classroom results. Further, learning through games is based upon a communicative approach so that students' communicative activities with experiential value will be used for the acquisition of knowledge and the development of communicative competence.

Moreover, the pedagogical concepts and methodological approaches underlying the COLLAGE project will follow contemporary methods of teaching and learning, based upon:

- **Constructivism:** Individual learners' construction of knowledge based on pre-existing and developing schemata. The learning environment built around a game is familiar and resembles computer games children are accustomed and attracted to. In this way the learning process is facilitated.
- **Socio-cognitive principles:** The COLLAGE project takes account of, and accommodates the social and cultural factors and the respective backgrounds of learners as they affect their learning process.
- **Exploratory learning:** By placing a game at the core of an interactive, learning environment, the mobile activities will provide an active learning process enabling the students to gain knowledge and skills beyond 'traditional' classroom results.

Although the COLLAGE project will use front-end technology, the aim is not to test this technology but to investigate its impact on education, and to focus on the results and changes that it can produce in the learning process. The project will develop a new learning scheme by introducing a technologically advanced approach for learning and teaching through every day activities. The COLLAGE approach will thus eliminate the distinction between the different educational environments (school, home, libraries, cultural places like museums, archaeological areas, etc.) and will bridge the theoretical and applied aspects of every day personal activities. The educational content will be not transmitted theoretically, but rather biotatically in the form of real life experiences. As research in pedagogy demonstrates, successful learning can be achieved in authentic situations. Furthermore, very much related to constructivist learning theories, the learner should be encouraged to actively explore "the world" by himself instead of teacher-oriented approaches which are often based on the idea of "knowledge transmission". Without denying the potentials of traditional education, it is attempted here to set a link between educational methods of traditional classrooms settings and the potentials given by mobile technologies, which still needs to be further explored. The COLLAGE concept takes furthermore the need for more interdisciplinary school education and collaboration into account, which is crucial for enhancing the effectiveness of education. This can provide a unique way of strengthening learning processes, such as discovering analogies, similarities etc., while providing topics which are inherently closer to real world problems.

The COLLAGE approach crosscuts the traditional boundary between the classroom, home, and other settings as distinct learn-

ing environments. It aims to involve the users (students, teachers) in extended episodes of playful learning. Specific elements to focus on here include motivating learning, demonstrating application, and scaffolded practice. One implication of this model is that students should be assigned activities that reflect the application of content knowledge as it is practiced outside the classroom. The goal is to induce the learner into a 'culture of practice' which makes knowledge meaningful. Another implication is that the feedback ideally should be intrinsically embedded into the context in which the activity is performed. A further implication is to have the learning challenge carefully balanced to keep it within a "zone" that matches the learner's ability. What we see is that elements that contribute to effective learning environments include a thematically meaningful story ("situating" the application of the knowledge), relevant and rapid feedback, and a carefully managed level of challenge. The working hypothesis of the partnership is that Autonomy-Oriented Education can be built around the notions of autonomy and a sense of belonging. Autonomy is composed of authenticity and self-direction. By authenticity we mean the individual's ability to be aware of his/her feelings, aspirations, his/her characteristic style of activity and learning and his/her various talents - and to adopt them. Self-direction is based on the individual's ability to think and act rationally, on his/her adequate level of literacy and on an adequate measure of emotional maturity. Belonging is grasped as being based on the individual's conception of himself/herself as belonging to a social group (and therefore to a culture) to which he/she is committed.

Within this general framework the COLLAGE service supports the pedagogical method of autonomous self-directing learning and allows for a self-directed acquisition of skills to meet users individual communication and learning needs, regardless of place and time. The self-learning method will be supported by elements of entertainment (learning by playing) in order to enhance learning at any time and in any place.

The proposed project will develop an innovative educational approach, which will guide students through the learning process, by using day-to-day activities as possible subjects of both formal and informal investigation. Many daily activities can be seen from a different point of view, where the every day reality will return. The goal is to shift away from classroom learning to 'daylong' learning and to use mobile technology to facilitate that shift.

To this end, COLLAGE envisages the following steps:

Through the organisation of a dedicated workshop at the early stages of the project, a reflection and exchange process will be initiated among project partners working on pedagogical design and invited experts, who will continue to communicate electronically towards carrying out an analysis and study of the pedagogical specifications for the COLLAGE platform, including a series of specific mobile learning scenarios and the corresponding lesson plans. The learning activities will be designed on the basis of a learning-game approach, which is extremely motivating for secondary school students' learning. More specifically:

Initially the implementation parameters (e.g. necessary adjustments to the curriculum) will be determined. Then a number of specific scenarios will be designed covering different educational contexts (pedagogical concepts), users (learner, teachers) and school subjects (Physics, History, Arts, Environment, Language, etc.) from various perspectives. A series of lesson plans for the different scenarios will be developed.

In the early stages of the development process, scenarios can be used for the planning of methodology as well as to characterise episodes or a sequence of activities like in a story. These stories will provide the context in which activities are carried out, giving insights about needs, difficulties and motivations students have in particular contexts. In this respect, scenarios are methods for requirements gathering. A second usage of scenario-based design in the early stages of the development process is the depiction of how a new tool can support a proposed course of actions. From this point of view, scenarios are a prototyping method, a design proposal.

Key elements for the COLLAGE scenarios are the users (single students or groups of students, and teachers), their goals, the sources of information accessed during the activities, the information generated by the students themselves and their needs.

# Learning Principles in Game-based Learning

The COLLAGE learning scenarios consist of a mesh up of principles of learning principles and educational computer games. The aspects of these scenarios are described in this guideline chapter. All further development of the pedagogical framework is based on them.

## Principle 1: match to the curriculum

The material should be matched with and aligned to the appropriate curriculum through:

- Clear objectives (at an appropriate level and form of specification)
- The relevance of content covered
- The appropriateness of student activities
- The nature of the assessment (where this is present)

## Principle 2: inclusion

- Wherever possible we should make the material applicable for different types and range of achievement (including special needs)
- Physical disabilities that can be particularly supported by electronic material (e.g. those with visual impairment)
- Different social and ethnic groups
- Gender
- The imperative here is not just that a particular group is served by the material (and that this is made explicit), but that it does not exclude a group

## Principle 3: learner engagement

The material should engage and motivate learners. This engagement should be evident in an ethos of being:

- Educational i.e. have a 'worthwhile' educational aim, and not just be used to occupy or entertain learners, although it might employ 'game-like' approaches to learning
- Motivating such that it is both enjoyable for learners and makes them want to continue using the material or want to carry on with learning the topic
- Such that it does not produce adverse emotional reactions that are likely to cause reduced motivation to learn in general, or to use digital material in particular
- Motivating such that it improves the class atmosphere for learning and makes it a good experience for teachers and learners alike
- This engagement and motivation may be achieved through one or all of aesthetic, technical and educational design

## Principle 4: innovative approaches

It should be evident why learning technologies are being used, rather than a non-technological approach which achieves the same end as effectively. Digital forms should be used where it brings an innovative approach which cannot be achieved in any other way. E-learning should, in other words, be fit for purpose

## Principle 5: effective learning

This principle can be demonstrated in a variety of ways:

- By the use of a range of approaches that will allow the learner to choose one that suits her, or can be personalized to her, or will extend the learner's repertoire of approaches to learning (such as 'learning how to learn')
- By providing empirical evidence of effective outcomes of the material
- By satisfying a number of the characteristics of good learning (learner agency; learner autonomy; encourages metacognitive (and high order) thinking; enables or encourages collaboration)
- By providing authentic material (authentic to situations outside school and to the learners' perspectives and situations),

and that also exhibits multiple perspectives on a topic (this could be seen as another aspect of authenticity)

### **Principle 6: formative assessment**

The material should provide formative assessment, i.e. assessment that is primarily aimed at improving learning. This may be achieved by a number of ways:

- By providing rapid feedback that helps learners to see how they can improve and what they must do to improve
- By providing opportunities for peer assessment, with appropriate understanding of the criteria or standards of performance required
- By providing opportunities for self assessment, with appropriate understanding of the criteria or standards of performance required

While it is possible (although not easy) within the project we should provide more rapid and personalized feedback to learners that will tell them what areas of their understanding are lacking, and where in the material they must put more effort, these by themselves are unlikely to make any difference to learner improvement. Similarly feedback which is too general for the learners' particular problems is unlikely to be effective. Feedback has to be specific to the learner's problems and specific to their needs for improvement.

### **Principle 7: summative assessment**

Summative assessment here is understood as that which is used to grade students for guidance as to, or selection for, future educational or work opportunities. Although not all digital material will have summative assessment (but it should have formative assessment), where it does, it must be:

- valid and reliable (i.e. assess what is aimed at in the objectives, and do this in a way that can be demonstrated by things like expert views, or ways of testing construct validity; give consistent results for particular learners or other users)
- Comprehensible by teachers, learners and parents (as appropriate)
- Able to deal with a range of achievement levels
- Free from adverse emotional impact on the learner

### **Principle 8: coherence, consistency and transparency**

The material must be internally coherent and consistent in the way the objectives, content, student activity and assessment (where present) match to each other. It must be open and accessible in its design. This implies that the components should each match and that the match should be transparent in its intention; for example the activities should be consistent with the objectives and the assessment should assess these objectives (and not un-stated or unknown ones). It should be clear to the user what they are expected to do.

### **Principle 9: ease of use**

The material should be transparent in its ease of use through:

- Being open and accessible
- Being intuitive and not requiring guidance on use (for either the teacher or the learner)
- The provision of appropriate guidance for the learner or the teacher and, in the case of the learner, should not require extensive training or instructions that are not themselves part of the educational aims of the material
- Appropriate assumptions about the ICT skills of users (both learners and teachers), or the provision of straightforward guidance on this

It is accepted that for teachers there may be some training in use, but where possible this should focus on pedagogy and not on software requirements. (However, in some cases, where software tools are to be used, some training is unavoidable, but it should be specified, in context and available.)

### **Principle 10: cost-effectiveness**

E-learning approaches are expensive. There are costs for technology, software, provision, maintenance, training, design, development, deployment. Technology solutions need to be justifiable, affordable and the costs sustainable.

# Characteristics of a Learning Scenario

A learning scenario has to have certain characteristics:

## Engagement

- Game-based learning
- Problem-solving
- Role Play
- Narrative

## Teaching and learning orientation

- Communicative
- Collaborative
- Encouraging higher order thinking
- Authentic
- Blended
- Reflection
- Recursion
- Exploration
- User generated - consumer/producer

## Innovative

- Balance between student driven, teacher driven and media driven
- Evidence why learning scenarios and technologies are chosen
- Evidence why mobile technologies are chosen

## Practical

- Simple, transparent and coherent
- Usability
- Re-usable
- Location (location based / independent)

## Inclusive

- Accessibility - inclusion of disabled students
- Transportable into different languages and cultures

## Intrinsically motivating

- Motivating - challenging
- Providing formative feedback

## Additionally following points have to be defined:

- Learning goals
- Defined criteria for evaluation
- Match to curriculum (every national curriculum)
- Cost-effective
- Metadata
- Constraints
- After school activities (homework) - 24 h learning

# Main steps in building a Game with the COLLAGE Platform

We identify five steps that encompass the authoring of the game, playing the game and reflecting on the learning gain after the end of the game. The steps may correspond to objectives which could be realised with a theoretical learning principle in mind.

## **Educational objective:** Getting interested in the place of the game

With the COLLAGE game experience learning takes place in a real context, beyond the four walls of the classroom. For example, choosing to play a game in the ancient palace of Knossos, students are in a place where it is possible to observe social classes and roles and realise that the Minoan civilisation is not just the palace, the ruins and the museum, but a whole system of social organisation which could be seen in any time and place. Choosing a place that would trigger the teacher interest would more likely trigger the students' interest too.

## **Educational objective:** Getting familiar with web-based and mobile learning technology and in particular with the COLLAGE platform

The teacher and the students that will work on the COLLAGE platform would profit from accessing information that they could find on the web and exploit them in a creative way. Getting familiar with searching and accessing the web would also be a benefit. Excellent opportunities of learning may be generated through collaboration of teachers of different subjects. For example, an IT teacher would help with accessing on-line resources and reusing them in a creative way, and a history teacher who is introducing the Minoan civilisation, and a sociology teacher who is teaching political organization. Secondary school students learn to gather data from all over around them and interpret it as information useful for learning, either on their own, or, most importantly, through face-to-face and virtual collaboration with their peers.

## **Educational objective:** By building learning paths and authoring questions the students set the scene of the game

A scenario or a narrative that will guide the players through the game will make the experience much more game-like. We need to show to the students that the questions to address to the players and the paths that will be created through the order and the setting of the questions will contribute to a thematically meaningful story and a carefully managed level of challenge. Tasks and roles in authoring the game are assigned to students who have to take the initiative and collaborate in a game authoring team. Students think what would be a difficult question since their aim is to make the opponents team's work harder. They would be encouraged not include the most obvious question and search more for challenging question.

## **Educational objective:** Learning through playing games

When the students finally reach the place of the game, the teacher does not intervene in the game procedure, but to give instructions and guidelines, when he/she realizes that the students deviate from the desired target. The students who play the game learn to collaborate, even under the exciting but somehow tight moments of falling behind the opposite team.

## **Educational objective:** Reflecting on the game experience as a process of knowledge construction and strategic collaboration.

As the opponent teams play the games their answers to the questions as well as data they collect to support their answers are recorded on a logbook that the platform support. After the game is played and is lost or won on the basis of accumulated score a second more qualitative round is played in the classroom to evaluate the data the players provide to support their answers. Photos or comments that the players have provided to support their question may be criticised by the opponents. Thus, the students are introduced not only in how to play a game but also in what it takes to author a game, to reflect on the quality of the questions and answers in the classroom, and to comment on the team's strategy during the game.

# Best Practices in Educational Computer Games

Computer games are a unique, powerful medium with great educational potential. To deliver on this potential, games must be designed according to best educational practices that reflect the differences and strengths of this medium. Below, the key best practices that are especially important are listed.

## Create context

- To create emotional investment, the game should give players strong identity, and present either a core problem to be solved or a journey to be taken.
- The game also needs to create a compelling world that the player interacts with and can meaningfully affect.

## Invite participation

- The game should understand and honour the players' existing skills
- The game should show players the path they can take (from newbie to star) and the ways in which they can impact the game world.

## Design for activity, not content

- The game should be designed around what the learners DO. They must gain and use knowledge in the service of action. They must learn in order to win. The game provides the tools to learn and understand the necessary knowledge.

## Learn through activity

- In order to learn through game activity, players should make decisions and face the consequences of those decisions.
- Players should have a chance to apply and test skills, and also to learn through pushing boundaries, failing, and trying again.

## Design for moment-to-moment engagement

- The game should give frequent feedback and rewards as part of game mechanics, and the game play should allow a "try, learn, try again" rhythm of interaction.
- Challenges should change based on player performance, and the player's impact on the game world should be clearly seen.

## Enable critical thinking

- The game should provide multiple overlapping goals, making it possible for different strategies to be used.
- The game should give the player the chance to examine choices and consequences, and to distil lessons from the action. Game feedback, assessment and reporting should help bring big things to light.

## Design for students

- The game should encourage teamwork and interaction in learning and play.
- Game complexity and action should be appropriate for varied student levels, and non-gamers should be able to easily use it.
- The game should provide students with help, feedback and reporting tools to allow them to succeed in the game and understand what they have learned.

## Provide tools for teachers to integrate the game into curriculum

- The game should provide teachers with in-game tools to monitor and control game play, as well as tools to review, assess, and present game activity in classroom discussions.
- Reporting tools should give complete information on game activity, so teachers can track and assess student performance.
- Game systems should be transparent, so teachers can know why game consequences occur.
- Tutorials, teacher support materials, and class plans will enable ease of integration into class and curriculum.
- Game options should provide teachers with flexibility in game use, while customization tools allow for further adaptation of games where needed.

# What do I need to get started?

To get started you will need:



## 1



Internet access via a PC to the COLLAGE games platform for creating a game or for playing from a distance along with the players who are visiting the site

## 2

While playing the COLLAGE games the players team needs at least one PDA handheld computer with Internet access, GPS unit and a photo camera



## 3

Pictures and text in digital format to incorporate in the questions of the COLLAGE games.



In the following chapters we will describe the basic functions of the COLLAGE platform:

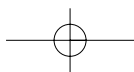
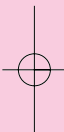
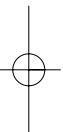
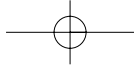
- how to author a game and
- how to play a game

**Game Library**

**Play the Game**

**Create your Team**

**Author a game**



## **Chapter 2:** **How to author a Game**



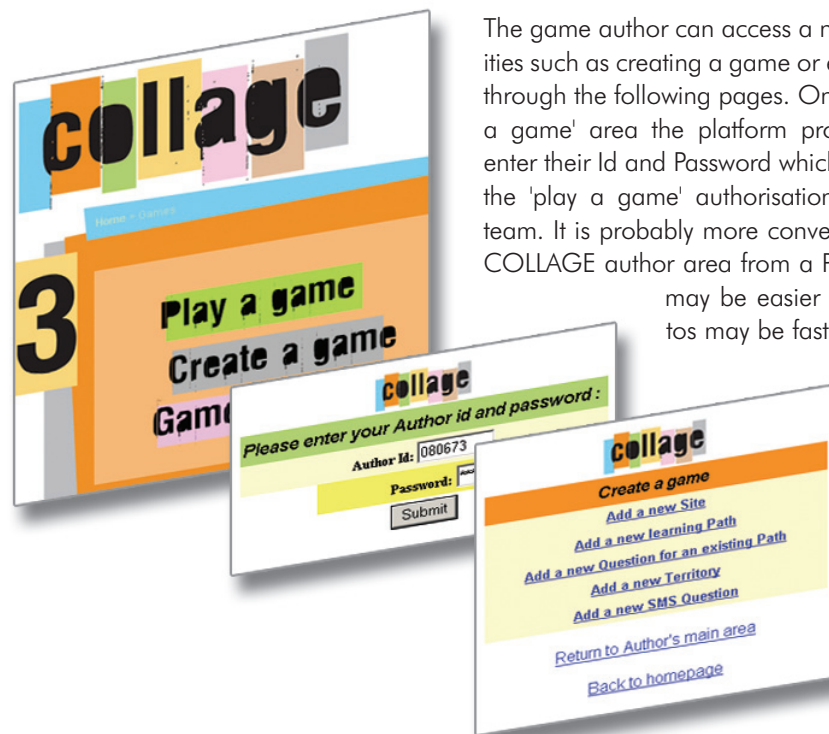
## Create a Game

In the COLLAGE platform we welcome users who would like to apply their imagination and creativity in creating games, whether they are teachers or students.

In this chapter we present a basic user manual of the COLLAGE author area alongside with suggestions on inventing the basic elements of a successful COLLAGE game<sup>1</sup>. The COLLAGE games aim to engage the player, challenge the learner, and trigger 'after-game' reflection and discussion within the game teams. The suggestions proposed here on games creating should be treated as a stimulus rather than a recipe. Successful games are designed as result of wit and imagination rather than as checklist fulfilment. Nevertheless, in the context of authoring a game for a specific site or location we know that we need two particular ingredients:

- A good narrative that will engage the student in the game
- And an appropriate challenge for the learner

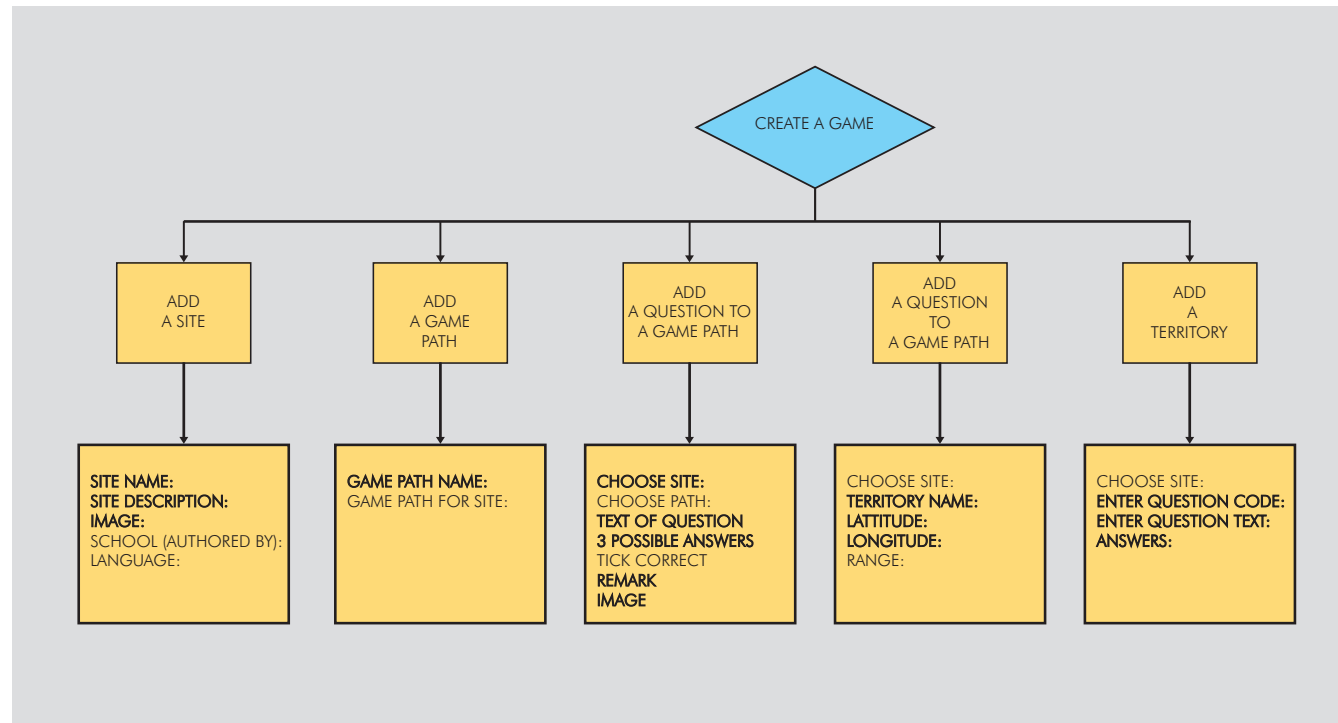
## Overview



The game author can access a number of functionalities such as creating a game or edit an existing game through the following pages. On entering the 'Create a game' area the platform prompts the author to enter their Id and Password which is provided, as with the 'play a game' authorisation, by the COLLAGE team. It is probably more convenient to work on the COLLAGE author area from a PC where editing text may be easier and uploading photos may be faster.

<sup>1</sup> The suggestions are based on the complementary COLLAGE publication 'Workshop on Educational Game Design'.

The diagram below illustrates the necessary elements in creating a game on the COLLAGE platform. It is hoped that the understanding of the COLLAGE platform structure will help game authors to expand the potential of game-based learning.



## The Location

**Stage 1:** Think about Place, Role or Scenario: What does it have to offer the learner

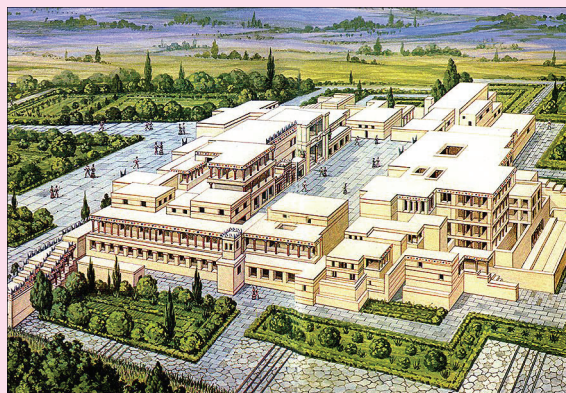
**Stage 2:** Define the big stories

Develop game like learning that grows from narratives. The narratives may come from specific locations, roles or scenarios.

### A narrative example:

A group of time travellers returned from the Knossos Place of Bronze Age back to modern time. It is a group of friends and colleagues with various interests, characters and backgrounds: a painter, a civil engineer, a sociologist, a journalist and a fashion designer. Thanks to their time travel in the past they lived an extraordinary day in Knossos Palace and they left with the best memories and a painting of the Palace created by their painter friend.

With a great desire to re-live their fantastic experience the five friends decide to go for a holiday to modern Crete. They are eager to go again to Knossos, to visit the ruins of Knossos Palace.

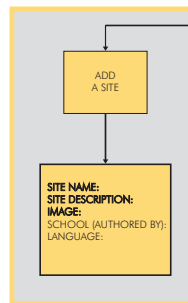


## Adding a Site on the Platform

In order to define the location in the COLLAGE platform simply

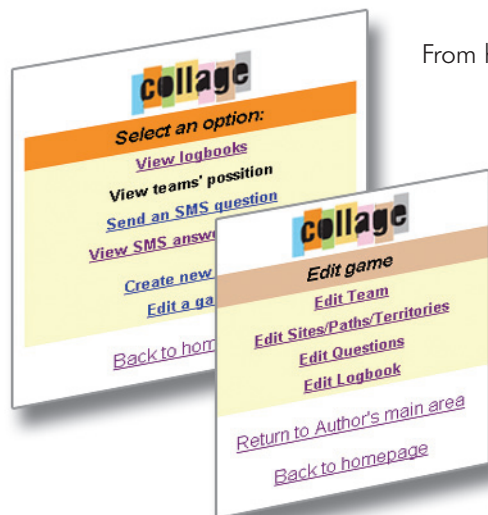
- add a name for the Site (e.g. Knossos)
- a brief description which may include your narrative as on your left page
- and an image which may illustrate an element of your narrative.

You may also indicate under which school the game was authored and with the help of which teacher.



**collage**  
**Submit a new Site**  
**Site name:**  
 KN OSSOS: A TIME TRAVEL  
**Site description:**  
 A group of time travellers returned from the Knossos Place of Bronze Age back to modern time. It is a group of friends  
**Upload an image for this site:**  
 C:\Documents and Settings\levi\Desktop\pic Browse...  
**School Name :**  
 Ellinogermaniki  
**Teacher Name:**  
 Evi Chrysafidou  
**Language:**  
 UK  
 Submit  
[Add a new lesson path](#) [Return to Author's main area](#)  
[Back to homepage](#)

If you would like to edit the text and image on this page you can follow the link Return to the Author's main area.



From here, you can follow the edit a game link...

...to edit any of the game elements

**Stage 3:** Think about the potential learning outcomes - what are the important things to be learned about the space? What stories has this place got to tell?

The important things to be learned may be identified through the following questions:

What was it like in the past?  
 What is it now?  
 Who used to use this space? - what did they do?  
 What is important about the physical geography of this space? - has this changed?  
 What is important about the ecology of this space (the study of relationships between plants, animals, people, and their environment, and the balances between these relationships)?  
 What is important about the man-made and man-shaped artefacts in this space?  
 What is important about the ways that the physical geography, ecology and human activity interact?  
 What has happened in this space?

The Knossos Palace is one of the most frequently visited archaeological sites in Greece, and there are a lot of guides, books, web sites, and photos of this place. It is easy to feel overwhelmed by all this available material.

**Stage 4:** Think about how the activity may have game -like potential- possibilities

The ruins of Minos' palace at Knossos have been found, but the labyrinth has not. The enormous number of rooms, staircases and corridors in the palace has led archaeologists to believe that the palace itself was the source of the labyrinth myth. It is said that no visitor could enter the Palace without someone to guide him around. Ariadne, the daughter of King Minos and Queen thought up a simple solution to the problem of the man she loved, Theseus, to survive the Labyrinth. She gave Theseus a ball of yarn (mitos) so he could find his way through the Labyrinth and kill the monster Minotaur.

**Stage 5:** Outline a plot- a story board- 3 act play

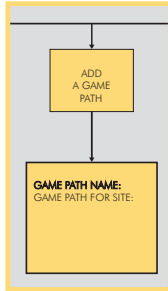
Myth and Bronze Age History are blurred. Unfortunately there is no 'mitos' for the time travelers who return back to Knossos. A plot may develop around finding your way in and out of the Knossos Palace, avoiding to get trapped in any of the rooms, finding things that the time travelers have admired during their trip back in time, and taking these things out of the labyrinth (effectively take a photo of these things).

1. ENTRANCE A: West Wing: (Finding the way in the labyrinth) - getting around the entrance A, identifying elements in the ruins from the reconstruction, that is the supposed painting. Devise an act around the, west court (it used to separate the palace from the rest of the city), the circular pits (used for depositing remains of religious rituals). On entering the Palace, the ruins reflect elements of social segregation, art, and religion
2. CENTRAL COURT: (Going around the central court). Why a central court in the middle of a maze? To make the kings department inaccessible? To create currents of air for a cooler to palace during the summer? What is the most impressive evidence of luxury? The running water? The paintings? On exploring the central park elements about the Palace administration, the architecture and engineering of the building become evident.
3. EAST WING: (Finding the way out) To get out you have to win a game of zatrikiion, a board game of the time. But first you have to find it! Win a bull fight, after finding out what the rules of winning the game are.

In terms of site structure we can identify the three-part plot with three game path areas. These are areas that the players are going to explore with the help of questions. Each game path imposes a challenge to the team players. It may also have a learning objective.

## Adding a Game Path to an Existing Site

There are three game paths that are based on the plot described in the previous page.



From the create a game page choose to add a game path, then fill in the spaces as in the example.

**Challenge: Central Court**

The royal appartments were inaccessible when the time travelers were there. But they had the chance to see how impressive and luxurious the surrounding rooms were, they met well dressed people who were playing a strange game, and felt cool air circulated in the long corridors during that hot summer day. However, they knew little about where exactly the king and queen stayed, what was the game they played, how keeping the temperature cool was possible, and what was the easiest way out, as they were always escorted by a guide...

[Ready? Let's play !!!](#) 😊

On a separate browser you can preview how this would look like when players are selecting the Central Court Path.

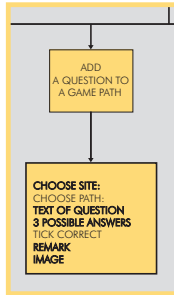
**Stage 6:** Think about opportunities for Meta-learning and increasing cognitive demand.

The story with five friends with the different profession gives a possibility of specialising the content of the game around categories. In the table below we can see a list of categories with corresponding professions. This categorisation is also a way to deal with the immense material on Knossos from guide books, history books and web sites. Could combining the themes with the questions proposes earlier by Stage 1 and 2, help to invent some interesting questions?

| Themes                      | Roles, Professions                              |
|-----------------------------|-------------------------------------------------|
| Art                         | Painter, Architect, Sculptor                    |
| Engineering                 | Civil Engineer, Computer Programmer, Technician |
| Education                   | Teacher, Physicists, Sociologist                |
| Politics and Administration | Politician, Journalist, Lawyer                  |
| Sports and Entertainment    | Actor, Football Player, Fashion Designer        |

## Adding a Question to an Existing Game Path

You can start adding questions to the game path.



**collage**

**Add a new question**

**Choose Site:**  
KNOSSOS: A TIME TRAVEL

**Choose Path:**  
Entrance A

**Write the question:**  
Look for the altars and near them the large circular walled pits ('Kouloures'). How many of these pits can you see? Comment on the usability of those pits and show their position with a photo.

**Give 3 possible answers (and select the correct one):**

Answer1: 2 ☐

Answer2: 3 ☒

Answer3: 4 ☐

**Remark:** Religious ritual were very important in Minos Palace

**Upload an image for this question:**  
C:\Documents and Settings\evi\Desktop\Nc Browse...

Store Question

[Add new site](#) [Return to Author's main area](#)  
[Back to homepage](#)

From the create a game page choose to add a question, then choose the appropriate path and fill in the spaces as in the example.

**collage** Sites/Path>Entrance A Total Points: 0

[use your LOGBOOK](#)

**Question:**  
Look for the altars and near them the large circular walled pits ('Kouloures'). How many of these pits can you see? Comment on the usability of those pits and show their position with a photo.



**Give your comments and then select the correct answer:**

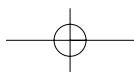
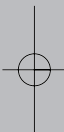
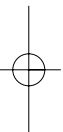
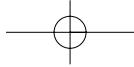
o 2

o 3

o 4

[Team's position](#) [skip question](#)

On a separate browser you can preview how this would look like when players are about to answer this question.



# **Chapter 3:** **How to play a Game**

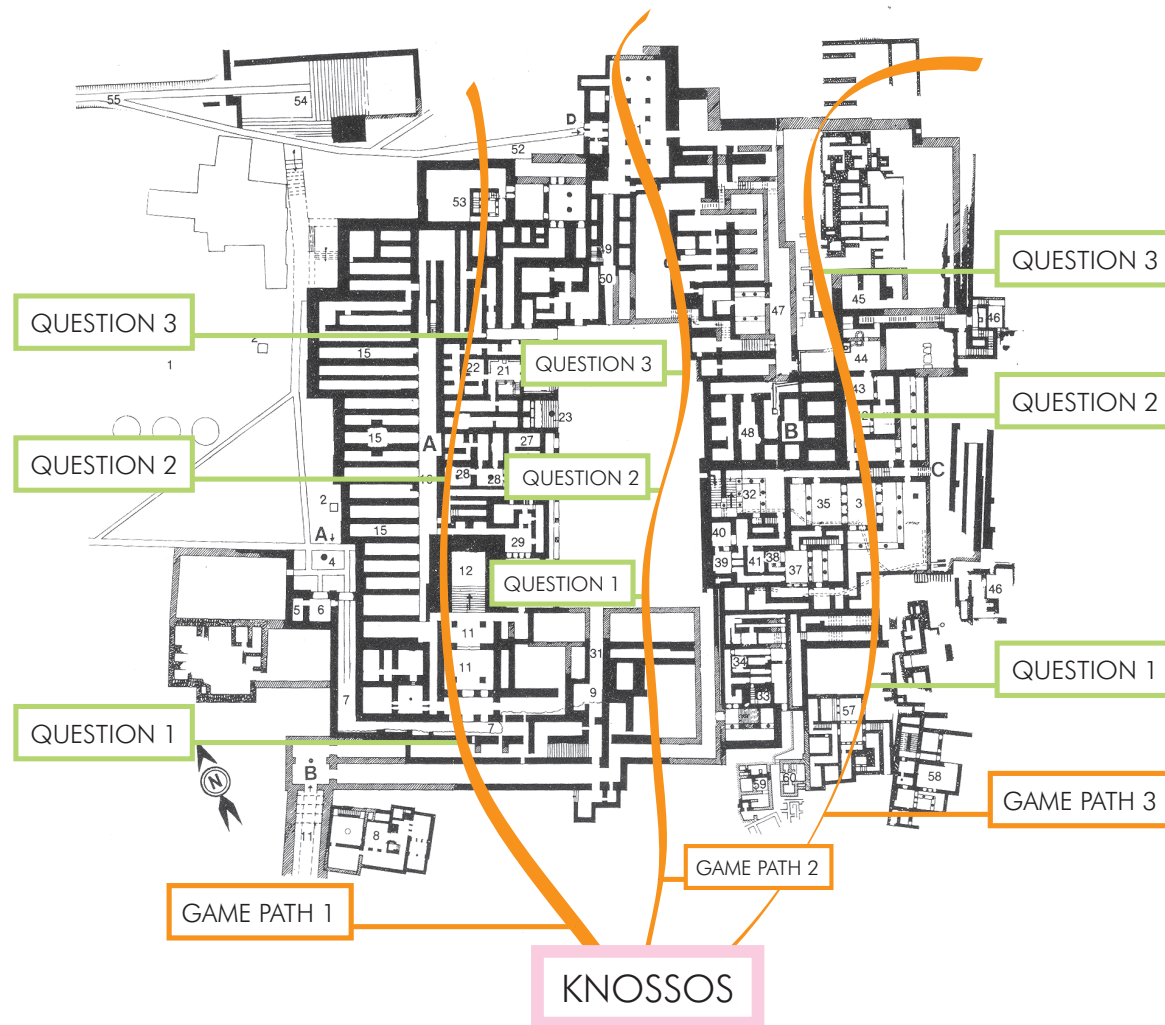


## Play the Game

A COLLAGE game is played at a site where a student group and their teachers are visiting. Leaving behind the school classroom the students are supposed to carry with them a PDA or a mobile laptop for accessing the COLLAGE games platform and web based information, as well as one or more mobile phones for communication.

When students play a game on the COLLAGE platform they need to know that for every site there are various Game Paths (learning scenarios) that they need to take in order to win a game.

The site may be identified with a physical location, for example an archaeological site such as the Knossos Palace. Many games will be uploaded on the COLLAGE platform, for various sites, by various European Schools and in various European languages. Students and teachers can browse the platform before deciding on the site they will visit (see Game Library). They may like some of the existing games or they may decide to create their own game for other students to play, as described in the chapter 'Create a Game'.



A Game Path, e.g. the path 'Through the Central Court', consists of a sequence of Questions that you need to successfully answer. The concept of a Game Path represents a set of question that is related to a specific area of the site, such as a court, a room or a building. Following a Game Path is like facing a challenge such as understanding the way of living in Minoan times, the heating mechanism in a Roman village, finding out how planes fly. Such a challenge drives the players to explore the Site, get lost, discover secret corners and win points. A Game Path has a beginning and an end. In the beginning the players are introduced to the Challenge of the Path and then they have to answer a sequence of Questions. In completing the Challenge they are enthusiastic to take up another Challenge.

## Create your Team and...

Open Sesame! On entering the COLLAGE platform, the first thing you need to do is to identify your team by entering you credentials, for example Team Id: 654321, Password: 4321. The author of the game you played (for example, Teacher: Evi Chrysafidou), is supposed to provide you with the school code and her Id. You need to add a mobile phone number so that you can receive SMS messages in the course of the game.

The image shows three overlapping screenshots of the COLLAGE platform interface:

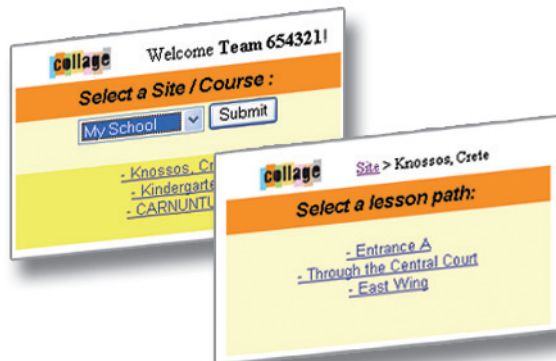
- Top Screenshot: "Please identify your team:"**
  - Team Id: 654321
  - Password: [masked]
  - Submit button
  - [Create your team](#)
- Middle Screenshot: "Create a team"**
  - School: Ellinogermaniki
  - Teacher: Evi Chrysafidou
  - School Code: 10
  - Teacher's Id: 080673
  - Leader's Mobile: 00306979190098 (International Format)
  - Team's Nickname: Time Travellers
  - Team's Id: 654321
  - Password: [masked]
  - Retype Password: [masked]
  - Submit button
  - [Back to homepage](#)
- Bottom Screenshot: "Please enter a new student under Team 654321"**
  - Name: Paul
  - Mobile: 003069 (International format)
  - Submit button
  - [Edit Students](#)
  - [Back to homepage](#)

If you do not have a team yet you need to create one. In some games, roles will be assigned to the team members. Here we simply have the team's leader and the team's players.

The team's leader is usually responsible for entering the answers through the PDA. While the whole team should agree on one answer a player may disagree with the team's decision, as we will see later.

As soon as you create your team the platform prompts you to enter new Players (students) in the Team. You can add your fellow students' mobile numbers so that they can receive SMS messages too.

## Go to Questions



1, 2, 3... GO!

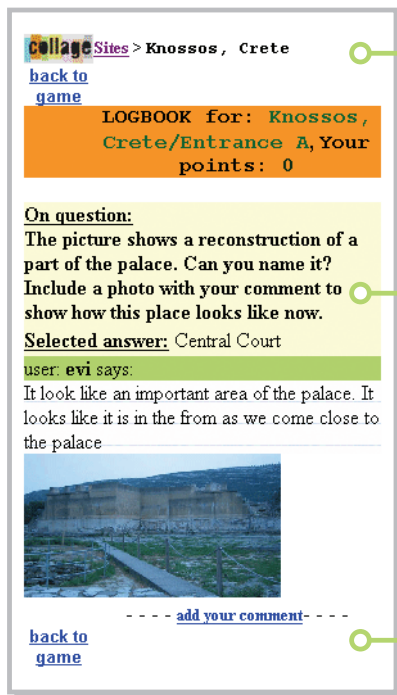
As soon as you identify your team the COLLAGE platform prompts you to Select a Site. You can view All the Sites, for which Game Paths and Questions are already written, or you can choose the Sites for which Game Paths are prepared by your School. As this game is addressed to many European schools, you can also select a site on the basis of the language the material is written in. The Knossos Site has a few game paths only. Let's choose the 'Entrance A' Game Path.



The Challenge is described in the screen besides. The game starts.

## The Logbook - The Learning Scenario

The logbook is a record of how the team dealt with the questions of each Game Path. The Players have to add a comment in order to support their answer, whether is the right or the wrong one. However, on entering the Logbook the player can infer from the Points collected whether they have chosen the correct answer. The pedagogical objective of the Logbook is to allow the players and the teams to review their playing strategy. By providing support for every answer the players are encouraged to think critically.

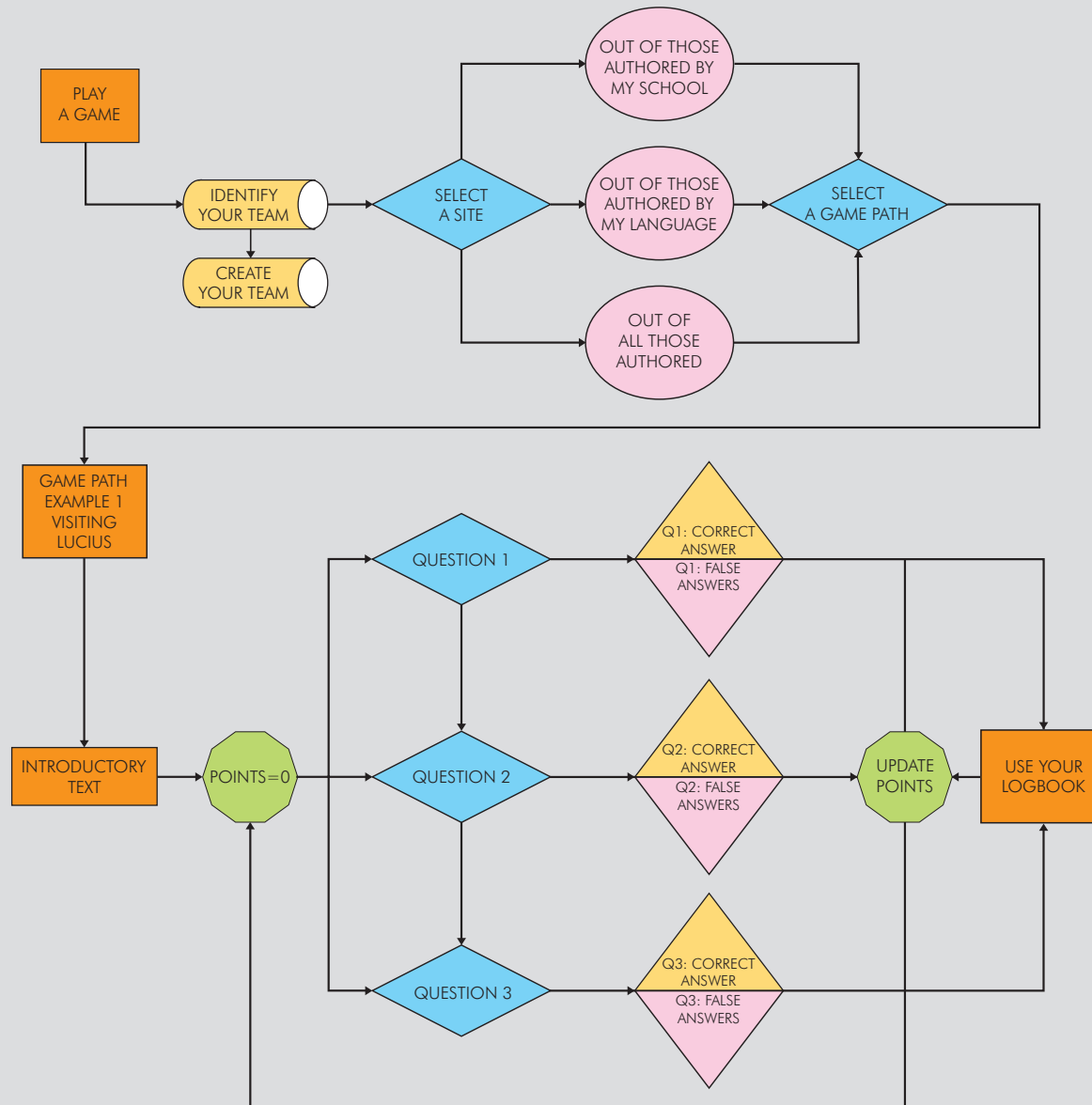


On entering the logbook the team has an overview of their situation, how many points they have, how many questions they have answered and how

Every entry in the Logbook corresponds to a Game Path question. The player is usually required to back up his or her chosen answer with a written comment, a photo taken on site or other information from the web, e.g. a hyperlink

Other players of the same team can add their own comments to back up the chosen answer or the comment initially add to support the chosen answer. Furthermore, a player that disagrees with the team's chosen answer can declare his or her disagreement with a comment

# Playing a Game with the COLLAGE Platform



## INDEX

MAIN  
FUNCTIONS

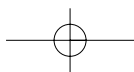
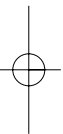
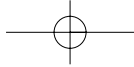
DATA THAT NEED  
TO BE ENTERED  
BY THE USER

THE USER  
FACES A SELECTION  
OF OPTIONS

PREDEFINED  
MENUS

ANSWERS

CALCULATION  
AND  
RECALCULATION  
OF POINTS



# **Chapter 4:** **Pedagogical Framework of the Evaluation**



## Pedagogical Framework of the Evaluation

Two are the pedagogical models that are combined in the COLLAGE project: mobile game-based learning and location-based learning. Both inform the evaluation in terms of methodologies and parameters to look at.

Mobile game-based learning takes advantage of the opportunities of mobile technologies for providing rich contextual information during the learning experience, as well as communication among learners separated geographically.

In mobile game-based learning scenarios, we have to take into account what determine the natural development of the activity, whether the activity is in real time or not, obstacles to performance, what will determine the outcome, define the kind of narrative that better fit learning goals, motivation strategies, etc.

Location-based learning is a type of scenario-based learning; it takes place in special physical locations. It's based on the concept of situated cognition, which is the idea that knowledge can't be known and fully understood independent of its context.

In COLLAGE project the locations are mediated by mobile communication devices. Location-based learning involves a process of thinking carefully about a space and what it is important to learn from, thinking of what is special to learn about that space and then deriving a narrative for learners about that space. In general it is important to take into account in the evaluation the following questions:

- What can be learned from a location
- What is worth learning from a location
- How that might be transformed into a narrative
- How that story might contain (game) challenges

Above all, it is of capital importance to envision to what extent the technologies involved, mobile and desktop ones, will enhance the potentialities of learning in the specific locations, as well as the engagement of the game strategies. Another key aspect is to what extent the learning experience (which includes the development of students' own learning resources) fits with the school curriculum. Finally, a key aspect of these pedagogical models is to enhance communication and collaboration skills of the students.

## Scope of Evaluation

The scope of evaluations activities is indicated by the project approach as described in the Technical Annex of the project in which the main directions are outlined. Throughout the project's implementation the new learning environment will be evaluated in real situations in real environments. Evaluation of pedagogical and technological aspects of the project will be done according to concrete and defined methodologies. The aim is to develop an accurate knowledge base on how different types of tools and instruments support different types of thinking, reasoning and understanding. The research process that will be adopted will include both measurements (subjective and objective data) and observations. In the educational aspect there will be a complete evaluation concerning how the tool influences student's learning as well as evaluation of the COLLAGE pedagogical framework in general. The educational value of the COLLAGE learning environment will be evaluated during the repeated cycles of student-centred work.

In parallel to the evaluation of the pedagogical value of the COLLAGE learning environment emphasis will be given to psychological, social and ethical considerations. The intention of the partnership is not to impose an ethical view, but rather pursue participatory ethics. Psychological, social and ethical considerations and standpoints will be tangled in the project at all levels taking heed of learners' co-design, but also of teachers and parents voices and emotions. In the subject of combination of pedagogy and technology the project will try to raise awareness for issues like: what is the most appropriate mix of physical (equipment, toys etc) and virtual (PC, video game environment) objects in learning activities? From this accurate evaluation scheme arguments in favour of the need for wider spread of new practices in education are expected to arise, arguments that will be distributed through an extended dissemination.

Special emphasis will be given to the development of the evaluation scheme in order to overcome difficulties associated with the relatively small number of users involved in different sites and the limited duration of the implementation of the project, which is the case for such pilot projects. Therefore, the research plan for the project's evaluation is based mainly on qualitative data, taking into consideration the following four key features:

- the exact determination of learning objectives
- the systematic data acquisition during the phases of implementation
- the introduction of a methodological reporting system
- the combination with the limited sample of the quantitative results

The evaluation of the didactic approach will be performed on four aspects: evaluation of student's learning, evaluation of the underlying pedagogical framework, ethnographical evaluation and evaluation of the impact of the COLLAGE approach on social and psychological issues.

1. Evaluation of the student's learning. Pedagogical experts will undertake the task of the development of methodology and empirical research to investigate processes of learning and knowledge acquisition in the framework of the COLLAGE application.
2. Evaluation of the pedagogical framework. The major theoretical issue underlying the COLLAGE project is whether the implementation of the emerging technologies (e.g. wireless communications) could offer a qualitative upgrade to the everyday teaching at the high school level. In such a case the introduction of technology would not act as a substitute of the conventional teaching but rather as an add-on that has to justify its introduction through the qualitative upgrade it offers to everyday school practice.
3. Ethnographic evaluation. The project will take advantage of different school environments across Europe and will study the attitudes of students and teachers with different cultures towards the implementation of advanced technologies in education as well as the attitudes between students themselves coming from different countries.
4. Evaluation of the impact of the introduction of technology on social and psychological issues. A feasibility study will be performed in the usability framework that will systematically address these issues in order to provide the frame of reference for the technical implementation of the COLLAGE learning tool.

These issues identified define the scope of the approach which will need to be oriented and focussed in specified areas depending from the context and scenarios to be applied and the influencing parameters of the further project implementation activities.

We therefore need to observe and analyse the effect of technology on learner actions, activities, intentions and goals as they engage in learning. We might also look at the institutional and management issues arising from the implementation of mobile devices within educational settings.

## Evaluation Approach

In the context of the concrete project activities intended the main evaluation activities in the framework of the COLLAGE project are related to the (1) pedagogical framework, (2) the learning environment and (3) the learning scenarios developed and tested during the project. This will result in a measuring of the potentials of the tools developed for their effectiveness to school education improvements and learning, focused at the pedagogical framework, data collection and data analysis.

Heuristic evaluation approaches can be applied for the identification of issues related to technologies and user-interface design (e.g. usability), qualitative approaches for pedagogical evaluation. However, this will very much depend on the timing of activities and scenarios implemented. Given the short period of time available, limitations will need to be taken into account.

### 1. Initial Parameters

The parameters of the pedagogical evaluation depend on the pedagogical framework developed by the project. Such parameters include issues such as interactions (nature of feedback), communication processes, roles of learning actors, motivation, team

work, learning outcomes, assessment etc.

The pedagogical framework is defined by learning principles as presented in WP 1. The principles which therefore need to be taken into account for evaluation are:

- Principle 1: match to the curriculum
- Principle 2: inclusion
- Principle 3: learner engagement
- Principle 4: innovative approaches
- Principle 5: effective learning
- Principle 6: formative assessment
- Principle 7: summative assessment
- Principle 8: coherence, consistency and transparency
- Principle 9: ease of use
- Principle 10: cost-effectiveness

The principles will be taken into account during the site visits. Evaluation will also take into account demographical data such as age, gender and given experience with devices, ownership of devices, number of students, type of students, level, age group, subject-related activity etc.

In addition, since some parts of the evaluation are concerning the mobile technologies to be applied, important aspects for evaluation will include usability issues, desirability matters and the study of interface design (what works and what needs to be improved in terms of interfaces, data exchange, easy use of the device, etc.).

## 2. Instruments

Evaluation instruments will be developed which are both appropriate to the persons to be involved and the cultural settings and implied distances to be taken into account. The following instruments are planned to be applied during evaluation: questionnaires (disseminated in printed and/or electronic version), interviews with teachers, learners and scenario providers (developers), field visits and observation activities. Table 1 presents an overview of the proposed evaluation design.

### Working language and data acquisition

The evaluation instruments will be developed in English language. In some cases observation and interviews need to be carried out by project partners in the native language of the cultural school context. The activities will be undertaken after preliminary instruction (e.g. in terms of guidelines) and under the supervision of the evaluation team.

### Timing

Given the situation that evaluation cannot take place before scenarios are designed and experientially implemented, the time frame suggested had been adapted according to the needs and constraints expressed by the partner institutions involved in the scenario planning. Timing is taking into account as well information provided by partner institutions during the first phase of evaluation activities

**Table 1:** Overview of COLLAGE evaluation design

| Subjects                                                                    | Objectives                                                                                                                   | Methods                                               | Target Groups                                                |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|--------------------------------------------------------------|
| Technology/devices/interfaces                                               | usability issues to identify malfunctioning matters, design improvements on interfaces, and devices, etc                     | - Questionnaires<br>- Discussion groups               | -Pupils<br>-Teachers<br>-Technicians<br>-Developer           |
| Learning outcomes                                                           | to identify the results of the learning activities in terms of learning achievements, appropriate summative assessment, etc. | - Interviews<br>- Quant. Data                         | - Pupils                                                     |
| Learning scenarios:<br>Classroom based activities                           | to verify the adequateness and effectiveness of developed scenarios                                                          | - Observation<br>- Interviews<br>- Field visits       | - Teachers<br>- Pupils                                       |
| Learning processes: communication among actors, motivation, assessment, etc | To investigate the interacting among participating students and teachers, learning motivation                                | - Observation<br>- Quant. Data/ Log.files etc.        | - Pupils<br>- Teachers                                       |
| Organisational aspects of the implementation, cost-effectiveness            | To analyse the organisation requirements in the learning scenarios, the cost-effectiveness, etc                              | - Interviews with administrators, costs analysis, etc | - School administration<br>- Technicians etc.                |
| Ethical and cultural issues?                                                | Accessibility of students with disabilities, gender issues, cultural aspects, etc.                                           | - Interviews<br>- Observation                         | - Policy makers<br>- Technicians<br>- Teachers<br>- Managers |

**Table 2:** Tentative timeframe

|                                                  |              |
|--------------------------------------------------|--------------|
| Design and development of evaluation instruments | Sep 2006     |
| Data collection                                  | Jan-April 07 |
| Data analysis                                    | May-Jun 07   |
| Evaluation report                                | Sep-Oct 07   |

# Information sheet about COLLAGE Scenarios.

*Please fill up this sheet to the best of your knowledge, and return it to us as soon as possible. Please answer the sections in order to help us to co-design both the objectives and the evaluation instruments of the COLLAGE experiments. The "Guiding questions" can help you in that matter; they do not need to be answered one by one.*

NAME: \_\_\_\_\_

Institution: \_\_\_\_\_

## Scenarios

### 1. Please, provide details on the intended scenarios from an institutional perspective.

Guiding questions:

- a) To what extent is the scenario relevant for your (school) environment;
- b) To what extent is it related to the curriculum
- c) Can the experiment be generalised in your school? What are the
- d) Will you plan activities with the participants in the other scenarios?

### 2. Please, provide details on the intended scenarios from a pedagogical approach.

Guiding questions:

- a) like "What is interesting to learn about the place?"
- b) What kind of pedagogical model(s) will be applied (game-based, location-based, other), mostly in your case?
- c) What about the pedagogical strategy(ies)
- d) What are the objectives in terms of intended learning outcomes and how can learning success be measured during/by the end of the activities

### 3. Please, provide details on the expected scenarios from a technological perspective.

Guiding questions:

- a) What type of technologies should be used and, if relevant explain the media mix in terms of devices/hardware and software to be applied.
- b) Why is the selection of software and hardware applications made for achieving project objectives (improved learning outcomes)
- c) In your opinion, how the technologies match the pedagogical approach.
- d) How the technologies help to achieve the learning outcomes,
- e) Are there references/examples from previous experiments carried out related to these scenarios? If yes, please provide details.



4. Please, provide details on the intended scenarios from a organisational aspects.

Describe the primary and secondary target groups envisaged (according to the description of work these are:  
students, teachers, researchers, managers) and outline their role and degree of integration

|                            |  |
|----------------------------|--|
| Students                   |  |
| Age                        |  |
| Gender percentage (app.)   |  |
| IT competence              |  |
| Primary curriculum subject |  |
| Other curriculum subjects  |  |
| Other (please specify)     |  |
| Teachers                   |  |
| Subject                    |  |
| IT competences             |  |
| Experience                 |  |
| Other (please specify)     |  |

5. In relation to COLLAGE pedagogical principles (which are mentioned in WP1),  
Please describe to what extent these principles will be reflected in YOUR scenario:

|                                            |  |
|--------------------------------------------|--|
| Pedagogical Principles                     |  |
| match to the curriculum                    |  |
| inclusion                                  |  |
| learner engagement                         |  |
| innovative approaches                      |  |
| effective learning                         |  |
| formative assessment                       |  |
| summative assessment                       |  |
| coherence, consistency<br>and transparency |  |
| ease of use                                |  |
| cost-effectiveness                         |  |



**6. From you point of view (i) in general and (ii) with reference to YOUR specific scenario,**

- What should be the main goal of the evaluation?
- What should be the priorities of the evaluation?
- Which methodological approaches do you prefer? Please tick your preferences:

|                                                           | YES | NO | I DON'T KNOW |
|-----------------------------------------------------------|-----|----|--------------|
| questionnaires                                            |     |    |              |
| site visits by experts                                    |     |    |              |
| Observations by experts                                   |     |    |              |
| Personal diary made by the teachers involved in each site |     |    |              |
| Analysis of log data in the server                        |     |    |              |
| Other (please specify)                                    |     |    |              |

Please select and suggest parameters that are important IN YOUR SCENARIO for the evaluation.  
Here is a list of some possible parameters:

|                                                     | YES | NO | I DON'T KNOW |
|-----------------------------------------------------|-----|----|--------------|
|                                                     |     |    |              |
| Interactions among students                         |     |    |              |
| Interactions among students and teachers            |     |    |              |
| Communication processes (sites and classrooms, etc) |     |    |              |
| Information overload                                |     |    |              |
| (new) roles of actors                               |     |    |              |
| Motivation                                          |     |    |              |
| Attitudes of students towards the technologies      |     |    |              |
| Team work                                           |     |    |              |
| Learning outcomes, expected and unexpected          |     |    |              |
| Assessment methods                                  |     |    |              |
| Ethical aspects (eg. Privacy)                       |     |    |              |
| Parents views                                       |     |    |              |
| Usability problems                                  |     |    |              |
| Technical functioning and technical adaptation      |     |    |              |
| Other (please specify)                              |     |    |              |

## 7. Evaluation timetable and cycles

- How important do you perceive evaluation for successfully completing your (a) (institutional) project work and (b) from a general perspective in relation to the intended implementations.
- With reference to the evaluation cycles to be implemented do you consider this frame as:
  - (a) Feasible
  - (b) Useful
- Please, describe the timeframe for the implementation of the intended scenarios for the whole project lifetime (amount of trials/test-runs, school activities etc.).

*The evaluation approach distinguishes between different phases and type of activities to be taken into account during project life-time. The data collection process therefore coincides with the testing, implementation and validation stages.*

**1st phase.** "Usability questionnaire", according to an heuristic approach. Also evaluation questionnaire on specific pedagogical aspects of the selected scenarios

**2nd phase.** "Site visits": Visits to the sites; observation templates in both the sites and the classrooms, users' interviews; pedagogical evaluation and usability evaluation

**3rd phase.** Pedagogical evaluation of the study projects

According to the project proposal the following time frame is set for evaluation (see below). Please, suggest modifications in case this cannot be applied for your case/in your country for whatever reasons (e.g. holidays, closing times). Look especially at the calendar for the Data collection.

| Evaluation phase                                 |                                                                                                                    |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Design and development of evaluation instruments | Sep 2006                                                                                                           |
| Data collection                                  | Oct-Nov 06,<br>"Usability questionnaire"<br>Jan-Feb 07,<br>"Site visits"<br>Apr-May 07<br>"Pedagogical evaluation" |
| Data analysis                                    | Nov-Dec 06,<br>Feb-Mar 07,<br>May-Jun 07                                                                           |
| Evaluation report                                |                                                                                                                    |

For all information provided in the questions above, please also take into account that your active involvement in evaluation activities (e.g. for translations, interviews, personal diaries) will be needed.

