

# WHEN TEACHERS BECOME GAME DESIGNERS

## Guidelines for Creative Game-Based Learning Practices





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### About these guidelines...

The guidelines aim to provide advice to educational practitioners who are willing to create their own Game-based learning (GBL) scenarios and to implement them in real teaching settings. The document provides:

- › An overview of the ProActive project and a summary of the implementation in schools, higher education and professional training settings. Practical examples, tales from the field and success stories are presented.
- › A set of guidelines that provide advice regarding creativity, GBL and the five learning metaphors.

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# INTRODUCTION

## Teaching creatively

During the last part of the 20th century and early part of the 21st, creativity has been seen to be increasingly significant in education (Craft, 2008). Indeed, many authors (e.g. Ferrari et al., 2009; Sawyer, 2006) suggest that creativity should be explicitly included as an educational objective. Nevertheless, creativity still does not seem to play a central role in the curriculum and learning objectives that teachers are asked to follow in the European countries (Cachia et al., 2009).

**Teaching creatively refers to teachers using imaginative approaches to make learning more interesting, exciting and effective** (NACCCE, 1999). Game-based Learning (GBL) is a good candidate to stimulate creative teaching approaches. Indeed, games provide challenging experiences that promote intrinsic satisfaction and offer opportunities for authentic learning (Gee, 2007; Mims, 2003).

## The ProActive project

ProActive - Fostering Teachers' Creativity through Game-Based Learning is a European project which promotes an innovative pedagogical approach where **practitioners at various educational levels become game designers** and engage in creative teaching practices. The project proposed and validated a four stages methodology that can be used by teachers and trainers from different sectors.

The **game design methodology was validated** through various activities. Within co-design workshops, teachers and trainers distributed among 23 pilot sites in four countries (Spain, UK, Italy and Romania) used two game editors for designing their learning games: **<e-Adventure>**, an open source software for creating adaptable 2D point-and-click adventure games for educational applications, and **EUTOPIA**, a free of charge tool for designing multiplayer educational scenarios in a 3D environment. Furthermore, the GBL scenarios were tested in real settings with students involved in hands on sessions.



## Five metaphors for learning

In ProActive we are firmly convinced that **we don't learn in only one way**, but in different ways that depend on personal aptitudes, on the learning situation and on the content to be learnt. In fact, every person is able to use a different combination of learning styles depending on the situation. The five learning metaphors model adopted in ProActive describes different ways of learning and is used as stimulus in the GBL design process. Each metaphor represents a preference for learning that is not exclusive.

**Acquisition** refers to the transfer of information from one who possesses it (the teacher) to another one who acts as a passive receiver (the learner).

**Imitation** is when the learner observes and models the behavior / attitudes of an expert to learn a skill.

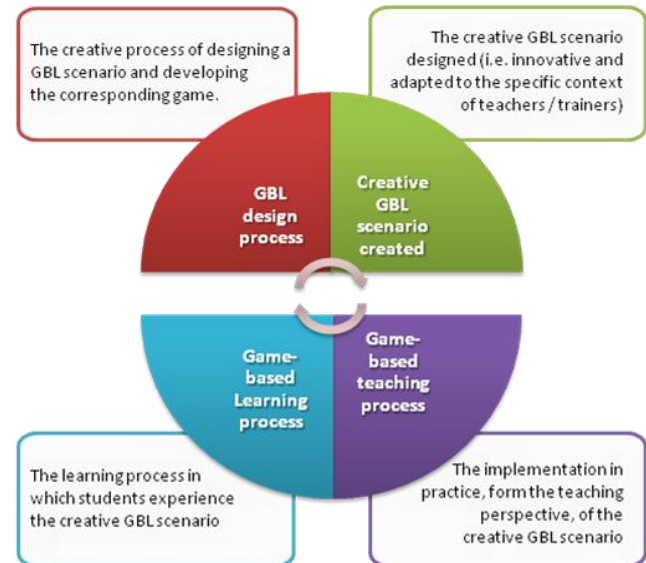
**Experimentation** closely relates to “learning by doing” processes and involves practical activities and skills. Learning occurs through repetition and practice of a specific skill in a safe environment.

**Participation** focuses on social aspects of learning activities, where students co-create new meanings and learning paths by interacting together.

**Discovery** is when learners interact with mediating artifacts and combine previous knowledge, in order to create new ideas, models and concepts. Thus, learning comes out from transformative actions on learning materials and situations.

*Taking into account the metaphors in the game design process can help to increase the pedagogical value of the resulting GBL experience.*

*In addition, thinking about which metaphors to use is a way for educators to enrich their learning models and include innovative and creative teaching practices in their daily strategies.*



## A scenario-based approach

In order to design meaningful GBL activities, many aspects need to be considered. Indeed, the game should be perceived as embedded in a learning scenario that takes into account the different parameters of the teaching and learning context.

While planning their GBL scenarios, educators might consider the particular characteristics of the learning audience, the specific learning objectives, the evaluation approach, the time-space resources and the technical requirements of the games. Moreover, it will be helpful to plan the step by step organization of the learning activities:

the structure of the activities before (e.g. introductory session, presentation of the game), during and after the game (e.g. discussion) should be planned.

## ProActive results

In total, 60 GBL scenarios were created among the different countries involved. They are related to a wide range of learning subjects (e.g. History, Physics, Computer Sciences, Language Learning) and address different educational levels (primary-secondary education, universities and professional training). A number of GBL scenarios were implemented in real teaching settings.

## The project had positive impacts on the involved learning institutions.

The implementation of the created GBL scenarios in real teaching settings proved to **promote creative teaching practices** in which **educational objectives were achieved**. The approach directly addresses transversal competences needed in the information age, such as **self-regulation** and **learning by doing**.

*The successful implementation enabled validation of a concrete tested methodology for contributing to the development of creative competencies that match the challenges of the digital culture.*





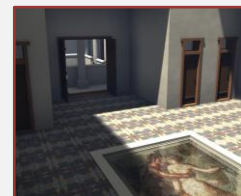
## EUTOPIA 3D environments



## EUTOPIA characters



## <e-Adventure> environments



## <e-Adventure> characters



# CREATIVE GBL IN SCHOOLS

GBL design and implementation in schools highlights the opportunities and challenges faced by teachers and pupils.

## Opportunities

› **Game design is fun:** Teachers enjoy the game design process, which is considered challenging and fun, and keep their motivation.

› **Collaborative game design is richer than individual:** When this process is collaborative, teachers have the opportunity to be involved in a team project in which they can distribute work among them and take into account various creative ideas. More generally, designing their own games enables teachers to discover a new way of working, in which they can collaborate with researchers, with other teachers, and with students.

› **Game design is a new teaching methodology:** Teachers highly value the fact of learning how to use videogames as a teaching tool, as they have to constantly evolve, renew and mature their teaching practices. Furthermore, teachers use a wider approach to learning and teaching. Teachers usually agree that they should use the participation and the discovery metaphor more frequently, as they stimulate deeper learning.

› **GBL enriches the role of teachers:** The teacher's role in the classroom evolves from instructor to flexible tutor and guide, who gives students appropriate feedback when needed.

› **GBL is a way to get closer to students:** The teaching experience enables teachers to enter in their students' culture and reality by using tools that fully integrate their everyday environment. Furthermore, students who usually have difficulties in paying attention or staying quiet during a traditional lesson have fewer problems concentrating during the GBL activity.

### ProActive in Spanish schools

24 primary and secondary teachers have designed 11 GBL scenarios. The designed games are multidisciplinary (related to different subjects such as local History, Mathematics, Language Learning and Physical Education) and were implemented in real teaching settings.

### ProActive in Italian schools

Participants from primary, secondary and high schools developed 10 GBL scenarios related to several subject (such as Science, History, Commercial Art, Social Science etc.) and some of these have been implemented in real educational contexts.

- › **GBL improves learning achievements:** GBL practices appear to contribute to the achievement of high learning outcomes. For students it is easy to learn with games. They appear to learn the knowledge embedded in the game, and to remember it well as their activity was engaging.
- › **GBL engages:** Students feel more actively involved in the GBL activity than in a lecture, and define games as a new and pleasant way to learn.
- › **GBL stimulates self-regulation and learning by doing:** Students are highly autonomous during the GBL sessions and manage to interact successfully with the computer and with the game interface.
- › **GBL encourages collaboration among students:** Mostly, students collaborate in order to help each other or to arrive at an agreement before deciding which action to take in the game.
- › **GBL helps improve schools' visibility:** GBL design and implementation contributes to the visibility of the teaching activities in the participating schools in the eyes of the public administration, the local educational policy makers and the communities. Indeed, the project outcomes are well received in the participant educational communities, such as teachers and training centres.

## Challenges

- › **GBL design requires training and support:** Game editors that provide very large selections of functionalities might be complex to use. This means that teachers would need training, time for practice and support before being familiar enough with the editor to achieve a working game and solve doubts and problems.
- › **GBL design requires a big time investment:** Developing and using games in the classroom requires more time compared to other methodologies, and is sometimes difficult to combine with other teaching activities.
- › **Technical challenges:** Conducting real-time game sessions requires a high quality Internet connection which still might not be available in all schools. Other unexpected technical problems might appear, such as incompatibilities of the editor with their operating systems.

### Success stories: IES de Sabón secondary school (Galicia region, Spain)

In this secondary education center of 250 students, nine teachers have designed four GBL scenarios:

- › *Alice's Trip*, a point and click game that teaches students about the history of a Galician city
- › *Tuning up a Bike*, a game aiming to teach secondary school students how to tune up a bike
- › *The Time Machine*, a game that allows the students to discover different time periods of the history of Galicia
- › *Collective negotiation*, a role playing game in which students debate to learn about management

The GBL scenarios were implemented in a classroom of 23 students. Teachers reported that students effectively learnt the knowledge embedded in the game. Students felt it was easy to learn with the games. They enjoyed the visual and interactive aspects of the games (e.g. to be able to walk and to take objects), as well as the humorous elements.



**Student:** *"I have the impression that I am more attentive with the game", "I learnt without realizing it."*

**Teacher:** *"The project generated a synergy of collaboration among teachers, as well as the elaboration of a viable educational project."*

### Success story: CEIP Ponte dos Brozos (Galicia, Spain)

Eight teachers of this primary school collaborated to design *The Holy Torq*, an adventure game in which students can learn about the local culture of Galicia.

Teachers liked working together, as they could share opinions and gather new ideas, as well as be involved in a common goal. Teachers considered the process *"enjoyable, fun and entertaining"*. On some occasions, teachers involved their students in the design process, which enabled them to continuously evaluate the adequacy of their games for the targeted audience. The GBL scenarios were implemented in a classroom of 24 students. They positively valued the games as fun and well designed.



**Teacher:** *"In the school we always need to be in the vanguard. I learnt a way to use videogames in my classroom."*

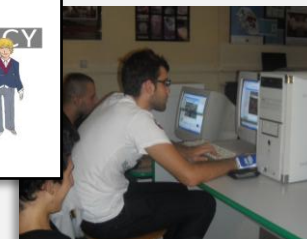
**Student:** *"It is easier to learn this way than through a book."*

### Success stories: I.I.S.S. Sarandì secondary school (Rome, Italy)

*Proactive agency* is a GBL scenario created with EUTOPIA for developing cooperation among players within a common decision-making process.

The goal is to create an advertising campaign on the theme “alcohol abuse among adolescents” following the instructions provided. Students should identify the target group for the campaign, develop the concept, define tone and style of the communication and finally create the graphic product.

Despite technical problems the school decided to go on with the game implementation. This required a strong collaboration between the school and the researchers. The game session will be delivered with eight students that have already been involved in the preparation for the game based session.



**Teacher:** *“The game is a good way for learning, it is not a waste of time as students are more involved and satisfied.”*

### Success stories: Ro Ferrarese primary school (Ferrara, Italy)



**Teacher:** *“Students consider the game very involving and they would like to repeat this experience. During the final discussion, we talked about the learning objectives and they showed they understood them completely.”*

The GBL scenario *Giro intorno al mondo* (Tour around the world) was developed with <e-Adventure>. It aims to foster motivation for learning about different cultures and customs. Learning goals are related to the acquisition of new concepts related to the historical, geographic, social and cultural aspects of some cities and countries.

The game was tested in the primary school of Ro Ferrarese. Fifteen eight-year old students were involved in the game session under the teacher's supervision. The teacher's and students' opinion was very positive: the game was easy to use, no technical problems occurred, students enjoyed the game and acquired useful knowledge.

# CREATIVE GBL IN HIGHER EDUCATION

ProActive has been applied in several pilot sites in higher education in Spain and Italy, highlighting both opportunities and challenges.

## Opportunities

› **GBL is a way to renewing the link with students:** Teachers highlight that GBL can be an innovative strategy to involve their students in each subject. Employing digital tools is important for making a better relationship with the students by moving closer to their language and interests.

› **GBL offers an opportunity of update:** Teachers who are interested in new didactical approaches see that GBL offers the possibility of updating their knowledge in the ICT field and also finding new tools to employ in their daily activities with the students.

› **GBL allows teachers to reflect on the teaching process:** The development cycle of the game must be carefully planned and adapted for the singularities of simulations. Although this is a time consuming task, it also allows teachers to be more reflexive on the teaching process.

› **Through game prototypes teachers can work together on the quality of the teaching strategy:** Teachers need to have a well-defined storyboard for the game. Then a functional prototype of the game can be set up and evaluated, not only by the teachers that produced it, but also by other colleagues that are experts in the field who can provide feedback with new eyes.

### ProActive in Spanish Universities

Teachers from heterogeneous disciplines (e.g. Medicine, Informatics, Marketing) have been instructed in the design and implementation of GBL scenarios using <e-Adventure>. They have actively participated in the development of 4 games for university courses.

### ProActive in Italian Universities

Teachers belonging to university and PhD fields have been helped by UNINA team to design 9 GBL scenarios employing EUTOPIA platform. Teachers focused above all on soft skills improvement through a game editor that helps relational issues thanks to a role-playing game.

## Challenges

- › **Game design requires high levels of realism:** The ProActive experience shows that game design for higher education, especially in science disciplines, needs a higher level of precision and realism. This usually leads to a shift from pure gaming elements (e.g. cartoon-like interfaces) to simulation mechanisms (e.g. use of pictures of real environments).
- › **Effort needed:** When teachers have no experience in designing and implementing games it is very difficult for them to realize how much effort developing a game needs - especially if their reference is the latest, “shinning state-of-the-art”. Creating a game is a very time consuming task!
- › **Number of students:** The major issue to take in consideration is the number of students we deal with when we address higher education, especially Universities. With a high number of students involved (about one hundred) there is a need to plan special activities carefully – including game sessions.
- › **Lack of resources for teachers’ training:** A possible problem in the common use of such instruments could be the training of the teachers themselves, when few resources are invested in the teachers’ lifelong updating in the high education domain.

### Success stories: Complutense University of Madrid (Madrid, Spain)

*Clinical Surgery* is a game developed in the Complutense University of Madrid by teachers from the schools of computer science and medicine. The goal is that students acquire basic habits and procedures required to safely operate inside a clinical surgery room. The goal is to speed-up the adaptation process of future surgeons to the practice of surgery, reducing the number of typical mistakes that inexperienced staff make and therefore reducing the risk of infections and other potential problems.

Teachers involved in the development of the game agreed that the availability of games developed for Medical education was very useful. In games like *Clinical Surgery* art resources cannot be found on the Internet, and therefore they have to be captured by teachers themselves.



**Teacher:** *"Having fully documented games in this field (Medicine) available for reference has been extremely useful. It's a better way to know how far you can get if you're new to Game-Based Learning."*



### Success stories: Experiences at the CATEDU (Madrid, Spain)

The Complutense University has also collaborated with the CATEDU ([www.catedu.es](http://www.catedu.es)) to develop a series of games.

One of these games, First Aid, has been tested with more than 300 students who had the chance to assist a "virtual patient" in three different situations during 45 minutes.



## Success stories: University Federico II (Naples, Italy)

Deus ex-Machina has been developed with EUTOPIA for helping such professionals as doctors and rehabilitation workers to gain knowledge on the technological tools to be employed with disabled persons in a school context. The main goal is to train them to identify the adequate aid for the different disabilities they might meet during their daily practice in order to give the correct information to schools about the didactic path to follow. The need that motivates this game is the very low information about disabilities and rehabilitation tools that is available in the school environment. Those who work with disabilities need to gain expertise with the different tools that the market can provide to facilitate the learning process of those people suffering any sort of cognitive and/or physical impairment.

The simulation aims to realize a path for developing autonomy for a student with verbal and motor impairment. The players' choices are evaluated with a standard feedback cycle based on the a) needs listening; b) assessment; c) possible solutions; and d) final testing. Reward is gradual and follows the players' ability to address the users' needs.

The game allows exploring the above mentioned areas, implementing the experimentation and discovery learning metaphors, while there is an implicit acquisition process.

The training program provides theoretical and practical knowledge about disabilities in the complex world of rehabilitation tools that are currently available. Soft skills improvement is crucial. Afterwards, the viewer tool of the platform could facilitate a debriefing process where each player could tell about his or her own experience within the simulation. The whole group and the tutor can provide feedback on the actions performed during the session, facilitating an awareness process. It could be advisable that both a technician and a psychologist moderate this step of the learning path.



**Teacher:** *"These activities gave me the chance to experiment with a new teaching process: train the students to employ technological tools, such as rehabilitation aids, through an innovative digital device. This could be a revolution within our context, goals and means to reach them are so close."*

**Teacher:** *"If our school system could face the training costs of the technological revolution, the students' learning process could benefit from a high level offer that surely facilitates and rouses their motivation."*

# CREATIVE GBL IN PROFESSIONAL TRAINING

The field of professional training is obviously a highly complex one, reflecting as it does the diversity of companies and of their training needs and showing both opportunities and challenges.

## Opportunities

› **A new way of learning:** The introduction of games in professional training is seen as an innovative methodology; trainers would need support for successfully applying this new pedagogical approach, especially when games are virtual simulations of real situations embedded in a realistic scene where their competences can be exploited.

› **Students are excited by complex GBL scenarios:** Trainees are generally excited about this new experience that enables them to apply the concept “learning by doing”, and are engaged by realistic games; they pay attention to the game’s objectives, the dialogue, feedback, and graphical aspects.

› **GBL as distance and blended learning:** In many sites where GBL scenarios are applied, the activities are conducted in a traditional system, but mostly in distance and blended learning systems. In fact, GBL is seen as an addition to the delivery of existing courses and better able to fit in if course participants access them remotely.

› **Students and trainees can analyse the game and provide feedback on its impact:** Students tend to analyze in detail each element of the game, its practical aspects, level of interactivity, and time for accomplishing objectives, while disapproving of any malfunction of the system. For a high positive impact the game should work perfectly, without any interruption or system crashes. If problems occur they replay the game at home with the aim of achieving better results (no mistakes, best time, best score).

### ProActive in Romanian Training institutions

In Romania, three pilot sites were selected to be part of the implementation phase. 9 games were created covering different subjects from computer skills to personal development. Games are included in learning scenarios and were implemented in real settings.

### ProActive in UK Training Centers

Four organizations have been involved in the implementation of the GBL scenarios. The games range over the disciplines and they deal with forensic science training, rock climbing, parental advices, careers awareness, etc.

## Challenges

- › **Variety of students:** For integrating GBL scenarios in real settings, specific peculiarities of the groups must be taken into account: age (a wide average age from 16–18 to 50 years old), background (previous experience in the field), expectations about the course (adults are more demanding with the information received and are focused on objectives), and number of learners (small / mid-size groups of students).
- › **Time constraints:** Although there may be an interest in using GBL in training programmes, only a few trainers want to allocate time for anything other than creating the design element of the packages.
- › **The delivery of the product:** Some trainers may be concerned about being involved in the delivery of a product that belongs to them as authors, since they don't feel comfortable with their own competences in the game development.

## Success story: European Computer Driving License Credis Centre

With the help of ECDL CREDIS Centre two valuable games were created for students enrolled in a computer skills certification programme. Both games were created with <e-Adventure>.

*Buying a computer* game was included in a training programme with 20 students, adults older than 35 years old. In this game, players have to learn the necessary hardware elements in order to assemble their own PC. The impact was highly positive for a course which usually consists of the trainer transmitting theoretical information. Including this activity increased the level of interactivity and students were motivated to continue the study at home.



*"This game helps me to get interactivity and participation from the students' side. They didn't look bored."*

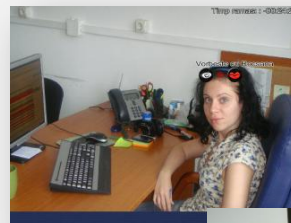
**Student:** *"I never thought that at my age I would play games and learn in the same time."*

## Success stories: CISCO Credis Academy

The team from this pilot site created four games using both <e-Adventure> and EUTOPIA game editors:

- › *Diagnosing an Internet connectivity problem*, a point and click game, in which the player is a network administrator, who has to identify and solve a connectivity problem;
- › *First step with Photoshop*, a journey into Photoshop world;
- › *Photoshop - photo editing*, players will learn to create/edit images and pictures;
- › *Binary conversion*, a role playing game helping students to know how to convert decimal to binary numbers.

Two of the games were already being implemented in courses, and students had the opportunity to discover a new side of training: learning is fun!



### Success story: Joint Service Mountain Training Centre

The Joint Services Mountain Training Centre is set among the mountains, seaside and rivers of North Wales. It has a mission to train young service men and women in extreme sports. An important part of their work is training people to climb mountains. They had developed a series of presentations to introduce their groups at the start of their courses to the safety elements of mountain climbing training, as well as the equipment and the language used on the mountains. Presenting this information was always a problem as the young people involved were often keen to just get out on the mountain and didn't want to sit through lectures.

So the idea that this information could be offered to the course members in advance over the Internet was of immediate appeal. The design process was an exciting time and, once the principals realized that the package could only be done in 2D as a point and click adventure, two phases were quickly identified. First was the knowledge acquisition phase where the user is given information about the gear to be used. This was presented in the form of a multiple choice question and answer session that resulted in the on screen character being clothed with the proper gear. Once ready for the mountain the on screen character is allowed to climb and in this second phase learns the commands to be used for safe mountaineering and also some of the ways in which equipment can be used.



**Teacher:** *"I hope this package will free us from the death by PowerPoint!"*

### Success story: Careers Wales



*iChoose* is an innovative way of raising career awareness prior to careers interviews. The package forces the user to think about his or her choices through first hand experience of the thought processes that led others to their choices.

First reactions to the *iChoose* package are also very good. Getting young people to think about what they want to do for a career is a problem that has baffled many people in the careers field. CAST worked with Careers Wales to develop a package that would be different from anything else, making use of an enormous database of videos about people in jobs.

Instead of preaching or directing young people through the process of selecting a career path, it asks a series of questions that prompt the reflective thinking that can lead to people making informed choices.

# GUIDELINES FOR CREATIVE GBL PRACTICES

The ProActive experiences pointed out a variety of opportunities and challenges regarding the use of games for learning purposes. This variety is mostly related to the specificities of each educational level where the games were designed and experienced. Despite differences, relevant common findings for fostering a creative application of GBL merged.

What follows is a checklist of good practices to be taken in consideration if you are willing to develop a creative game-based session for educational purposes or if you want to innovate your teaching lessons through game design.

## Creativity

› **Explore the game editor at the beginning of the process:** At first, spend some time exploring the functionalities of the game editor you want to work with, in order to know what is possible / not possible to do, and develop your game ideas accordingly.

› **Consult many examples of games:** Games in general, and learning games especially, can give you ideas of good practices and represent a good source of inspiration.

› **Enable your ideas to evolve:** Be flexible, and adapt your ideas according to your teaching objectives, your students' profiles and your resources.

› **Write a storyboard:** It is important to detail your game dynamics before starting to use the game editors. This will help you effectively expand your ideas into the plan of a full and consistent game, by planning details about the forms of game-play, the content of scenes, and the progression of the narrative.

› **Review your GBL scenario on a frequent basis:** It is critical to review your game at different moments of the design process, according to your teaching objectives and your students' profiles, in order to evaluate its appropriateness, usefulness, correctness, and value.

› **Collaborate:** Peers' opinions can bring new insights, and be a good source of evaluation. Co-designing your GBL scenario with colleagues will enable you to obtain better results, encourage your efforts and give you additional inspiration.

› **Involve your students:** They will be happy to participate in the design of a game. Furthermore, working with them will enable you to know if the game is adapted to their profile.

## Learning metaphors

- › **Focus the goals:** Be clear about the expected results and the achievements you want your students to gain at the end of the learning process. Be aware that the goals you choose may need a specific evaluation that could be difficult to integrate within particular institutions where content centered individual knowledge is generally preferred.
- › **Define the leaning process:** On the basis of the teaching goals and of the content to be learning, choose the teaching path that is the most adequate to support them. Keep in mind the metaphors: acquisition, imitation, experimentation, participation and discovery... and remember that you can use more than one metaphor at a time, but there must be a continuation in the subsequent steps.
- › **Check the metaphors:** At this point you should be ready to check your game-based teaching strategy according to pros and cons implied in each metaphor. Take a look at the handbook<sup>1</sup> on this topic.
- › **Discuss with your students the learning process:** Students should be aware of what you expect from them and on what they will be evaluated. This implies that a discussion should be carried on with students on the learning process, clarifying expectations and possible doubts.
- › **Debrief and Evaluate:** A debriefing on what happened during the game will be useful both for you and your students. In fact, discussing students' expectations and difficulties may help you in the evaluation of their performance and in the testing and eventual improvement of the game elements.

## Game-Based Learning

- › **Decide when to use a game approach:** It is important to make carefully the decision of choosing GBL approaches. Games deal very successfully with things that sometimes are difficult (or even impossible) for learners to do in reality (working with hazardous substances in laboratories, traveling in history, investigating a murder, or driving a robotic vehicle on the moon). Furthermore, games can be useful if you want your students to adopt different roles in different situations, if you want to provide complex interaction among concepts or to introduce theoretical concepts in an immersive narrative.

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<sup>1</sup> For more information on the “Handbook for teachers - Production of Creative Game-Based Learning Scenarios” produced within the ProActive project visit: [http://www2.ub.edu/euelearning/proactive/documents/handbook\\_creative\\_gbl.pdf](http://www2.ub.edu/euelearning/proactive/documents/handbook_creative_gbl.pdf)

› **Embed the GBL session within other learning activities:** It is critical to plan complementary activities around the game (introductory session, discussion, homeworks, etc.), so students can play and learn in a meaningful way.

› **Make sure that games fit with timing of lessons:** Games could be designed in an episodic form to fit with lessons. Added to that, the facility to log into games remotely allows teachers and trainers a lot of flexibility (in the case of online games, e.g. EUTOPIA) Games can be introduced in sessions and then users can finish them at home or at other locations.

› **Promote the continuity between knowledge and real life situations:** With games users are given the opportunity to make judgments and experience that there is a direct interplay between action and consequence. Some learning situations will benefit from a built-in possibility of repeatedly rehearsing actions. In fact, reinforcement can be a very useful pedagogical tool. However, it is difficult to assess whether the acquired knowledge helps students' understanding of real life situations. Nevertheless, if you reinforce the action-consequence relation, you will be contributing to the connection of the acquired knowledge to the real life situations.

› **Never include something that distracts from the learning:** You may want to add gimmicks and flights of fantasy that games often have. Doing this depends on the resources that you are able to create. One rule could be put forward: never include something that distracts from the learning. When choosing computer games for lessons apply the same rule. If this works for your lessons it will work for your educational games too.

› **Design in group:** Games need a lot of time to be developed. That's a fair point to make. Add to that the challenges of producing your own resources such as graphics, music, video files and so on. But if the design process is approached collaboratively as a group activity, then all those involved can contribute according to their own strengths. Furthermore, students can sometimes be involved in the design process. Design in a group has proven to facilitate and enrich the games production.



*More advice on how to design GBL scenarios is available in the ProActive handbook for teachers, available at [http://www2.ub.edu/euelearning/proactive/documents/handbook\\_creative\\_gbl.pdf](http://www2.ub.edu/euelearning/proactive/documents/handbook_creative_gbl.pdf)*

**Good luck with your games!**

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## USEFUL LINKS

ProActive project website: [www.proactive-project.eu](http://www.proactive-project.eu)

<e-Adventure>: <http://e-adventure.e-ucm.es/>

EUTOPIA: <http://www.lanas.unina.it/eutopia/>

Handbook for teachers – Production of Creative Game-Based Learning Scenarios:

[http://www2.ub.edu/euelearning/proactive/documents/handbook\\_creative\\_gbl.pdf](http://www2.ub.edu/euelearning/proactive/documents/handbook_creative_gbl.pdf)

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## **ProActive project - Fostering teachers' creativity through Game-Based Learning**

Lifelong learning Programme - Key Action 3, 2010/2011, Project number 505469-LLP-1-2009-1-ES-KA3-KA3MP

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