

Role-Play Educational Game "Management of heritage site"



Developed within project

***EduGame: Innovative Educational Tools for Management in Heritage Protection -
gamification in didactic process***

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EDUGAME Project

Innovative Educational Tools for Management in Heritage Protection: gamification in didactic process

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Introduction

One of the outputs of the [EDUGAME Project](#) (Innovative Educational Tools for Management in Heritage Protection – Gamification in didactic process) implemented in frames of Erasmus+ Programme, is a Role-play “Management of heritage site”.

The phases of the design activity of the Role Play have been:

- ❖ Study of the game-based learning theory
- ❖ Analysis of literature about role plays
- ❖ Benchmarking of role plays designed
- ❖ Analysis of Partners’ previous experiences
- ❖ Role Play design (Design process, Main purposes of the game, Description of the target-group characteristics, Edugame Role Play Learning Outcomes, Design approach and tools, Testing, Implementation of corrections)
- ❖ Game description, phase by phase

1. STUDY OF THE GAME-BASED LEARNING THEORY

Game-based learning has been presented and explained during the second project meeting, held in Firenze (December 14th, 2019), and during web-meetings in the period June-July 2020, when Pedagogical design and Role play have been also introduced.

1.1 LEARNING INNOVATION, GAMIFICATION AND GAME BASED LEARNING

The partners shared the following definition of **gamification**: “using game design elements in non-game contexts” aware of the other possible definitions:

- *The process of using game thinking and game mechanics to solve problems.* (Deterding, et al, 2011)
- *The use of game mechanics, dynamics, and frameworks to promote desired behaviours.* (Lee, & Hammer 2011)
- *The trend of employing game mechanics to non-game environments such as innovation, marketing, training, employee performance, health, and social change.* (The Gartner Group)
- *Gamification is using game-based mechanics, aesthetics, and game thinking to engage people, motivate action, promote learning and solve problems.* (Kapp, 2012)

In particular, educational gamification proposes **the use of game-like rule systems, player experiences and cultural roles to shape learners’ behaviour.**

Rules / game mechanism, players profiles, narrative design, visual aesthetic design, incentive system, feedbacks, award / winner are the most common elements of games¹.

Game researcher Jane McGonigal² argues that a game consists of **goals, rules, feedback, challenge, valued outcomes, and is played voluntarily.**

So, a game is **played by choice** because it is **fun!**

A game has well **defined goals.**

The game is governed by **rules** and **instructions** that players abide by.

Players **take actions** – again, think of a chess move, or buying boardwalk.

The game ends definitively with **winning or losing.**

Two other essential elements can be added to strategy games such as chess, monopoly, and business simulation games. The **actions are affected by other player actions**, and sometimes by **random events** such as the roll of a dice or acquiring a chance card (e.g. Monopoly).

In anticipating the opponent’s actions and the game's random events, **players develop strategies** that increase our chances of winning.

Humans of all ages and cultures like playing games. We have always played games and likely always will. The historian Herodotus wrote about game playing in the ancient world. (McGonigal, 2011)

¹ Jesper Juul (2001) includes five essentials present in a game: (1) rules, (2) variable quantifiable outcomes, (3) valued outcomes, (4) player attachment to outcomes and (5) effort. Other features that are frequently found in games include challenge, player control or influence, fantasy (no real-life consequences), role playing, competition, mystery, adaptation to changing skill levels, assessment, progress, sensory stimuli, and immediate feedback.

² <https://janemcgonigal.com/>

To understand which opportunities can give us the adoption of **gamification in teaching**, we adopt the answer given by Banfield e Wilkerson³: “*The problem of education is that we must convert student extrinsic motivation into intrinsic motivation in order to increase student self-efficacy to explore, participate and to reach true knowledge gain and nurture new innovative thought (Bandura 1977; Kolb 1984). Gamification pedagogy does not simply imply creating a game, it is a pedagogy used to make the student more engaged without deflation of educational credibility (Muntean, 2011).*”

Foundation of this approach is the **Experiential Learning Theory (ELT)**. ELT is not a new pedagogy as it was developed by Dr. David Kolb (1984) and built on the foundation methods established by education theory pioneers John Dewey, Kurt Lewin, and Jean Piaget.

Kolb’s ELT describes learning as a process whereby **thoughts are formed then re-formed through experience**, thus creating new knowledge and deeper understanding (Kolb, 1984). ELT, at the very core, is hands-on learning pedagogy that is student centric.

Gamification is commonly used in business programs in the form of case study and in elementary schools to engage new learners but is just breaking surface in other disciplines. **Gamification does not simply imply creating a game, it is a pedagogy used to make the student more engaged without deflation of educational credibility** (Muntean, 2011).

The use of play in an educational context and for purposes of learning and development is by no means a new phenomenon. However, the **growing acceptance of digital games** as mainstream entertainment has raised the question of how to take advantage of the promise of digital games for educational purposes.

Definitions of **game-based learning** mostly emphasize that it is a type of game with **defined learning outcomes** (Shaffer, Halverson, Squire, & Gee, 2005). A corollary to this definition is that the design process of games for learning involves balancing the need to cover the subject matter with the desire to prioritize game play (Plass, Perlin, & Nordlinger, 2010). This corollary points to the distinction of game-based learning and gamification.

Consider as an example the gamification of math homework, which may involve giving learners points and stars for the completion of existing activities that they consider boring. Game-based learning of the same math topic, on the other hand, even though it may also include points and stars, would involve **redesigning** the homework activities, using artificial conflict and rules of play, to make them more interesting and engaging.

Games are effective learning environments because they guarantee:

- **MOTIVATION**: learners stay engaged over long periods through a series of game features, such as stars, points, leader boards, badges, and trophies, as well as game mechanics and activities that learners enjoy or find interesting (i.e. that create a high situational interest; Hidi & Renninger, 2006; Rotgans & Schmidt, 2011).
- **ENGAGEMENT**: cognitive engagement (i.e., mental processing and metacognition), affective engagement (i.e., emotion processing and regulation), and behavioral engagement (i.e., gestures, embodied actions, and movement), sociocultural engagement.
- **ADAPTIVITY**: the capability of the game to engage each learner in a way that reflects his or her specific situation. This can be related to the learners’ current level of knowledge, to cognitive abilities, to the learners’ emotions, or to a range of other variables.

³ James Banfield, Brad Wilkerson, Eastern Michigan University, USA, *Increasing Student Intrinsic Motivation And Self-Efficacy Through Gamification Pedagogy*, 2014

- **GRACEFUL FAILURE:** Rather than describing it as an undesirable outcome, failure is by design an expected and sometimes even necessary step in the learning process (Kapur, 2008; Kapur & Bielaczyc, 2012; Kapur & Kinzer, 2009; Plass, Perlin, et al., 2010). The lowered consequences of failure in games encourage risk taking, trying new things, and exploration (Hoffman & Nadelson, 2010).

In the literature, the most common games elements described are:

1. **GAME MECHANICS** describe the essential game play: the activity or sets of activities repeated by the learner throughout the game. These activities can primarily have a
 - a. a learning focus (learning mechanics)
 - b. an assessment focus (assessment mechanics)
 - c. in many cases they focus on both (Plass & Homer, 2012; Plass, Homer, et al., 2013).
2. **VISUAL AESTHETIC DESIGN** includes visual elements such as:
 - a. the overall look and feel of the game and
 - b. the game characters,
 - c. but also, the form of representation of key information.
3. **NARRATIVE DESIGN** is the storyline that is advanced via features such as cutscenes, in-game actions, dialogues, and voice-overs. Unlike most movies and books, games allow for nonlinear narratives that advance based on the choices made by the learner. Narratives provide contextual information for learning, connecting rules of play, characters, tasks, events, and incentives.
4. **INCENTIVE SYSTEM** includes the many motivational elements that aim to encourage players to continue their efforts and feedback that attempts to appropriately modify their behavior (e.g., see Kinzer et al., 2012).
5. **CONTENT AND SKILLS** will determine the learning mechanics to be used, the visual design to be adopted, the narrative design, the incentive system design, and the musical score (Plass & Homer, 2012);

Through educational games **content and skills** can be proposed:

- **Preparation of future learning:** the game does not have its own learning objectives but instead **provides students with shared experiences** that can be used for following learning activities, for example, class discussions.
- **Teach new knowledge and skills:** introduces **new knowledge and skills** for the learner to acquire as part of the game play.
- **Practice and reinforce existing knowledge and skills:** provides opportunities to **practice existing knowledge or physical and basic cognitive skills** in order to automate them.
- **Develop 21st-century skills:** provides opportunities to **develop more complex socioemotional skills** related to **teamwork, collaboration, problem solving, creativity, communication**, and so on.

1.2 A DIDACTICAL APPROACH TO DESIGN EDUGAME ROLEPLAYS

“Game-based learning is a type of game with defined learning outcomes” (Shaffer, Halverson, Squire, Gee, 2005)

Starting the design of a game-based learning we created a **“syllabus”** because we had to define the **main purposes**, the **initial requirements**, the **didactical objectives**, and we needed to delimit the field of infinite possibilities, precisely defining and sharing the objectives, which are a safe guide for following choices.

To be able to formulate learning outcomes that could be effective and useful for us and for students, we are reminded that a learning outcome must be: **Specific, Measurable, Assignable, Realistic, and Time related.**

To design our project Role Play we followed some pedagogical methodologies:

- **Constructive Alignment**, formulated by John Biggs lets us understand why we started identifying the ILOs. Biggs suggests us to align ILOs, teaching methodologies and assessment. This alignment is «constructive» because we use it to build students' learning process. *"In constructive alignment, we start with the outcomes we intend students to learn and align teaching and assessment to those outcomes. The outcome statements contain a learning activity, a verb, that students need to perform to best achieve the outcome, such as "apply expectancy-value theory of motivation", or "explain the concept of ... ". That verb says what the relevant learning activities are that the students need to undertake in order to attain the intended learning outcome. Learning is constructed by what activities the students carry out; learning is about what they do, not about what we teachers do. Likewise, assessment is about how well they achieve the intended outcomes, not about how well they report back to us what we have told them or what they have read."* The [SOLO Taxonomy](#) helps to map levels of understanding that can be built into the intended learning outcomes and to create the assessment criteria or rubrics. Constructive alignment can be used for individual courses, for degree programmes, and at the institutional level, for aligning all teaching to graduate attributes".
- **Taxonomy of Educational Objectives**, familiarly known as Bloom's Taxonomy, has been applied by generations of teachers and college instructors in their teaching. The framework elaborated by Bloom and his collaborators consisted of six major categories: Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation. The categories after Knowledge were presented as "skills and abilities," with the understanding that knowledge was the necessary precondition for putting these skills and abilities into practice. In 2001 a revision of Bloom's Taxonomy with the title A Taxonomy for Teaching, Learning, and Assessment, a systematic classification of the processes of thinking and learning. The authors of the revised taxonomy underscore this dynamism, using verbs and gerunds to label their categories and subcategories (rather than the nouns of the original taxonomy). These "action words" describe the cognitive processes by which thinkers encounter and work with knowledge. Each category requires the achievement of the prior skill or ability before the next, more complex, one, remains easy to understand. Out of necessity, teachers must measure their students' ability. Accurately doing so requires a classification of levels of intellectual behavior important in learning. Bloom's Taxonomy provided the measurement tool for thinking.

The structure of the Revised Taxonomy Table matrix "provides a clear, concise visual representation" (Krathwohl, 2002) of the alignment between standards and educational goals, objectives, products, and activities.

The taxonomy provides the team-teachers with a common language, helps them to understand how their subjects overlapped and how they can develop conceptual and procedural knowledge concurrently, provides a new outlook on assessment and enables teachers to create assignments and projects that required students to operate at more complex levels of thinking, helps in writing, examining and revising objectives to insure the alignment of the standards and objectives with both the standards and the assessments.

ILO's VERBS are:

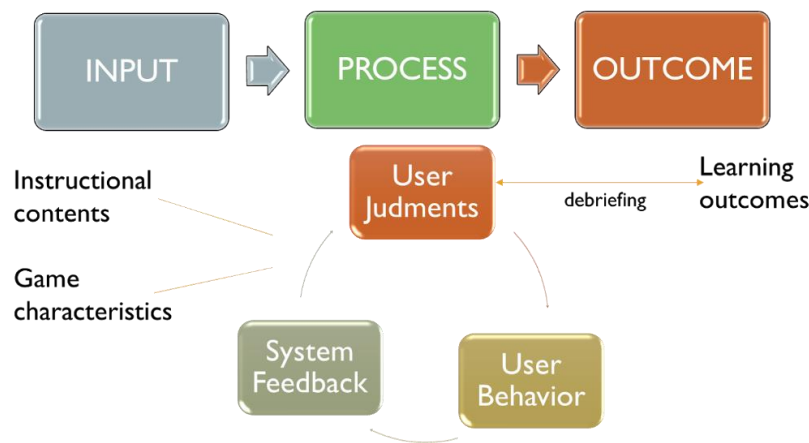
- Remember (Recognizing / Recalling)
- Understand (Interpreting / Exemplifying / Classifying / Summarizing / Inferring / Comparing / Explaining)
- Apply (Executing / Implementing)
- Analyze (Differentiating / Organizing / Attributing)
- Evaluate (Checking / Critiquing)
- Create (Generating / Planning / Producing)

- **Social Learning (A. Bandura)** proposes as a key concept that people learn through observing others' behavior, attitudes, and outcomes of those behaviors. *"Most human behavior is learned observationally through modeling: from observing others, one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action"* (Bandura). Social learning theory explains human behavior in terms of continuous reciprocal interaction between cognitive, behavioral, and environmental influences.
 - Observation:** more cases (with relative solutions) taken from different areas on the same problem, are presented to students.
 - Underlying cognitive processes:** students try to predict the decision-making scheme put in place in the various cases and try to structure the model.
 - Abstract conceptualisation:** learners outline the behaviour observed, analyse strengths and weaknesses and begin to select the essential factors, reflect on the sequences, the features, any temporal or cause-effect connections and so on.
 - Application/motivation:** having a good reason to imitate, students are stimulated to apply the model to a new concrete case.

- **The Kolb's Cycle (D. Kolb):** *"Learning is the process whereby knowledge is created through the transformation of experience"* (Kolb, 1984, p. 38). Kolb's experiential learning style theory is typically represented by a four-stage learning cycle in which the learner 'touches all the bases':
Effective learning is seen when a person progresses through a cycle of four stages:
 - Concrete experience:** students actively explore concrete experiences.
 - Reflective Observation:** students reflect on the experience.
 - Abstract conceptualisation:** students draw conclusions of a general nature exploring the theoretical dimension of the argument.
 - Active experimentation:** students will apply the contents learned in a real or realistic context.Kolb (1974) views **learning as an integrated process** with each stage being mutually supportive of and feeding into the next. It is possible to enter the cycle at any stage and follow it through its logical sequence. However, effective learning only occurs when a learner can execute all four stages of the model. Therefore, no one stage of the cycle is effective as a learning procedure on its own.

- **Model of game-based learning:** There is a tacit model of learning that is inherent in most studies of instructional games. First, the objective is to design an instructional program that incorporates certain features or **characteristics of games**. Second, these features trigger a cycle that includes **user judgments or reactions** such as enjoyment or interest, user **behaviors** such as greater persistence or time on task, and further **system feedback**. To the extent that we are successful in pairing instructional content with appropriate game features, this cycle results in recurring and self-motivated game play. Finally, this **engagement** in game play leads to the achievement of training objectives and specific learning outcomes⁴.

⁴ Rosemary Garris, Robert Ahlers and James E. Driskell (2002), Games, Motivation, and Learning: A Research and Practice Model



According to this model:

- The learner **actively constructs knowledge** from experience.
- Learners **don't learn in the same way**, nor all learners proceed through these stages in a sequential or linear manner.
- People do learn from **active engagement** with the environment.
- This experience coupled with instructional support (i.e., debriefing, scaffolding) can provide an **effective learning** environment.

This quick “flight” through some of the most significant theories of learning was instrumental in our design: our final goal is a **motivated learner**.

Motivated learners are easy to describe: they are enthusiastic, focused, and engaged.

They are interested in and enjoy what they are doing, they try hard, and they persist over time. Their behavior is self-determined, driven by their own volition rather than external forces.

Skinner and Belmont (1993) noted that although motivated learners are easy to recognize, they are hard to find; and they are, we would add, hard to create.

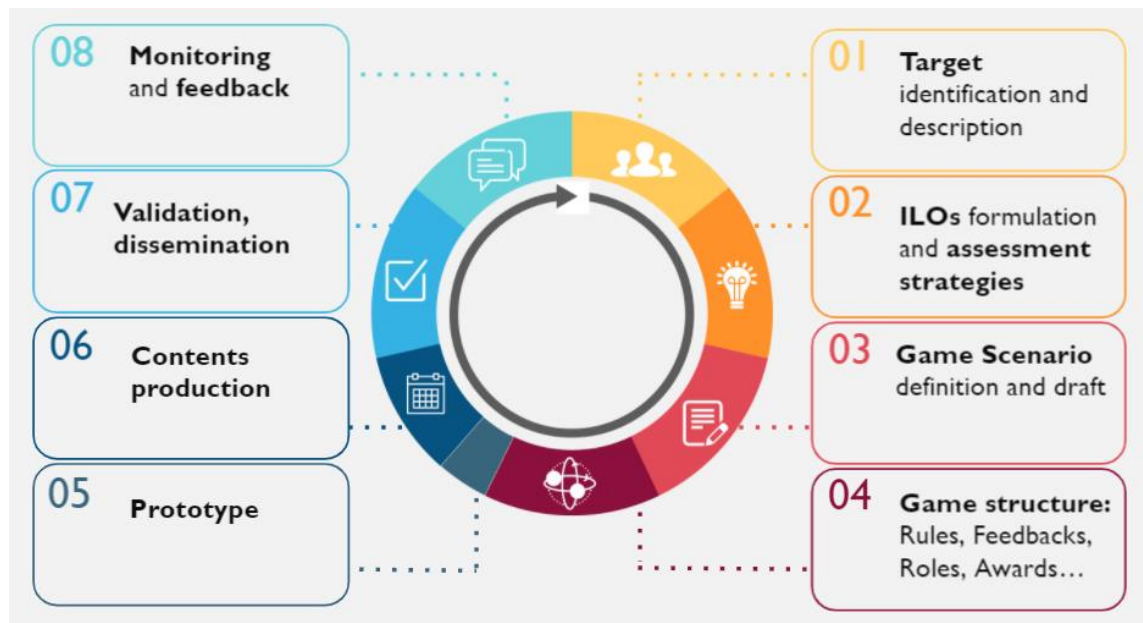
There are a number of **models of motivation** that differ in emphases and constructs.

These range from **expectancy/valence approaches** (Mathieu, Tannenbaum, & Salas, 1992) to Keller's (1983) **Attention, Relevancy, Confidence, and Satisfaction** (ARCS) model (for reviews, see Pintrich & Schrauben, 1992; Schunk, 1990).

Behavior can be intrinsically or extrinsically motivated. Most models have emphasized intrinsic motivation, focusing on the motives to perform a task that are derived from the participation itself (Malone, 1981; Malone & Lepper, 1987). Malone (1981) proposed that the primary factors that make an activity intrinsically motivating are challenge, curiosity, and fantasy and specifically applied this framework to the design of computer games. Others have examined extrinsic motivation, in which someone engages in an activity as a means to an end (Vallerand, Fortier, & Guay, 1997). Although extrinsic rewards can be less effective than intrinsic motives, both intrinsic and extrinsic motives play a role in determining learner behavior. Deci and Ryan (1985) have noted that self-determined learner behavior can stem from both intrinsic motivation (i.e., the learner engages in an activity because it is interesting or enjoyable) and from extrinsic motivation they termed identified regulation (i.e., the learner engages in the activity because he or she desires the outcome and values it as important).

1.3 LEARNING ACTIVITY DESIGN PROCESS

Design activity of Edugame Role Play followed the typical learning design process: Edugame Role Play is an educational activity, part of an university course.



2. ANALYSIS OF LITERATURE

2.1 SIMULATIONS AND ROLES PLAY FOR EDUCATION

Bowman, *Educational Live Action Role-playing Games: A Secondary Literature Review*, in *The Wyrd Con Companion Book 2014*

[CONFLICT RESOLUTION ROLE PLAY](#) in cooperation with: Ministry for Foreign Affairs, Board of Education, Ministry of Education and Culture of Finland

Colucci-Gray L., *An inquiry into role-play as a tool to deal with complex socio-environmental issues and conflict*, Thesis submitted to the Open University in fulfilment of the requirements for the degree of Doctor.

Crookall, D., & Saunders, D. (Eds.). (1989). *Communication and simulation: From two fields to one theme* (Vol. 4). Multilingual matters.

Hitchens M., Drachen A., (2009) [The Many Faces of Role-Playing Games](#), *International Journal of Role-Playing*, Issue 1

Konstantinov, O., E. Kovatcheva, N. Palikova, (2018) [Gamification In Cultural And Historical Heritage Education](#), In: *Proceedings of 12th International Technology, Education and Development Conference INTED 2018*, 5-7 March 2018, Valencia (Spain), pp. 8443-8451

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Kriz, W. C. (2010). A systemic-constructivist approach to the facilitation and debriefing of simulations and games. *Simulation & Gaming*, 41(5), 663-680.

Perlstein, Andrew, et al., (2017), [*Making Sustainable Development Real Through Role-Play: The Mekong Game Example*](#), *Journal of Sustainability Education* 12

Taylor J.L., (1983), [Guide on simulation and gaming for environmental education](#), UNESCO-UNEP Environmental education Series

Westrup, U., & Planander, A. (2013), [Role-play as a pedagogical method to prepare students for practice: The students' voice](#).

Zagal, J. P., Deterding, C. S., (2018), [Definitions of Role-Playing Games](#), in: Zagal, José P. and Deterding, Sebastian, (eds.) *Role-Playing Game Studies*. Routledge , pp. 19-52.

2.2 GAMIFICATION AND GAME-BASED LEARNING

Boller, S. (2012), [Game Based Learning - Why Does it Work?](#) A Learning Brief. Retrieved November 12, 2012

Chentanez, N., Barto, A.G., Singh, S.P., (2014), [Intrinsically motivated reinforcement learning](#), In *Advances in neural information processing systems*, pp. 1281-1288

Ebner, M., & Holzinger, A. (2007), [Successful implementation of user-centered game based learning in higher education: An example from civil engineering](#). *Computers & education*, 49(3), 873-890

Eseryel, D., Ifenthaler, D., & Ge, X. (2011), Alternative assessment strategies for complex problem solving in game-based learning environments. In D. Ifenthaler, P. Kinshuk, D. Isaias, G. Sampson, & J. M. Spector (Eds.), *Multiple perspectives on problem solving and learning in the digital age* (pp. 159–178). New York: Springer.

Gutierrez, K. (2012), [The 5 Decisive Components of Outstanding Learning Games](#). SHIFT eLearning Blog. Retrieved November 12, 2012

Hamari, J., Shernoff, D. J., Rowe, E., Coller, B., Asbell-Clarke, J., & Edwards, T. (2016), [Challenging games help students learn: An empirical study on engagement, flow and immersion in game-based learning](#). *Computers in Human Behavior*, 54, 170-179.

Kapp, K.M., (2012) *The gamification of learning and instruction: game-based methods and strategies for training and education*. Pfeifer, San Francisco

Karagiorgas, D. N., & Niemann, S. (2017), [Gamification and Game-Based Learning](#). Journal of Educational Technology Systems, 45(4), 499–519

Lacanieta, A. (2020). Live Action Role-Play as Pedagogy for Experiential Learning, SCHOLE: A Journal of Leisure Studies and Recreation Education, DOI: 10.1080/1937156X.2020.1718035

Linser, R., Lindstad, N.R. & Vold, T. (2008). The Magic Circle - Game Design Principles and Online Role-play Simulations. In J. Luca & E. Weippl (Eds.), Proceedings of ED-MEDIA 2008--World Conference on Educational Multimedia, Hypermedia & Telecommunications (pp. 5290-5297). Vienna, Austria: Association for the Advancement of Computing in Education (AACE). Retrieved November 9, 2021 from <https://www.learntechlib.org/primary/p/29109/>.

Mann, J. H., & Mann, C. H. (1959). Role playing experience and interpersonal adjustment. Journal of Counseling Psychology, 6(2), 148–152. <https://doi.org/10.1037/h0047665>

Mortara, M., Catalano C.E, Bellotti F., Fiucci G., Houry-Panchetti M., et al., (2014), Learning cultural heritage by serious games. Journal of Cultural Heritage, Elsevier, vol. 15 (n° 3), pp. 318-325. [ff10.1016/j.culher.2013.04.004](https://doi.org/10.1016/j.culher.2013.04.004)[ff. ffhal-01120560ff](https://doi.org/10.1016/j.culher.2013.04.004)

Muntean, I.C., (2011), [Raising engagement in e-learning through gamification](#). In Proc. 6th International Conference on Virtual Learning ICVL, pp. 323-329, 2011.

Petterson, J., (2006). The Art of Experience. In T. Fritzson & T. Wrigstad, eds. Role, Play, Art: Collected Experiences of **Role-Playing**. Stockholm: Föreningen Knutpunkt. Ch. 10. <http://jeepen.org/>

Taylor, A.A. (2015). [The Active Instructor: Benefits and Barriers to Instructor-Led Serious Gaming](#). 2015 7th International Conference on Games and Virtual Worlds for Serious Applications (VS-Games), 1-8.

Zagal, J. P., & Deterding, S. (2018). Definitions of “role-playing games”. In Role-Playing Game Studies (pp. 19-51). Routledge.

2.3 FORMATIVE AND PEER ASSESSEMENT, FEEDBACK

Cho, K., Shunn, C. D., & Roy, W. W. (2006). Validity and reliability of scaffolded peer assessment of writing from instructor and student perspectives. Journal of Educational Psychology, 98, 891–901.

Hattie, J., & Timperley, H. (2007). The power of feedback. Review of educational research, 77(1), 81–112

Hughes, G., Smith, H., & Creese, B. (2015). Not seeing the wood for the trees: developing a feedback analysis tool to explore feed forward in modularised programmes. Assessment & Evaluation in Higher Education, 40(8), 1079–1094.

Masoni, M., Formiconi, A. R., Shtylla, J., & Guelfi, M. R. (2020). Application of peer-review in a university course with a high number of students. *Form@ re-Open Journal per la formazione in rete*, 20(3), 196-205.

Mulder, R., Pearce, J., Baik, C., & Payne, C. (2012). Guide to student peer review. <http://peerreview.cis.unimelb.edu.au/wp-content/uploads/2012/06/Academic-guide-FINAL.pdf> (ver. 15.12.2020).

Pelaez, N. J. (2002). Problem-based writing with peer-review improves academic performance in Physiology. *Advances in Physiology Education*, 26, 174–184.

Rudolph JW, et al. (2008) Debriefing as formative assessment: closing performance gaps in medical education. *Acad Emerg Med.* ;15(11):1010–6.

Timmerman, B., & Strickland, D. (2009). Faculty should consider peer review as a means of improving students' scientific reasoning skills. *Journal of the South Carolina Academy of Science*, 7(1). Article 1. <https://scholarcommons.sc.edu/cgi/viewcontent.cgi?article=1063&context=jscas> (ver. 15.12.2020).

Topping, K. (1998). Peer assessment between students in colleges and universities. *Review of Educational Research*, 68, 249–276.

2.4 EDUCATION AND LEARNING INNOVATION

Biggs, J. B. (2003). *Teaching for Quality Learning at University*. Buckingham: Society for Research into Higher Education and Open University Press.

Dewey, J. (1997). *How We Think*. New York: Dover Publications. Dostal, J. (2015), Inquiry based instructions. Google drive

Downes, S. (2010). New Technology Supporting Informal Learning. In: *Journal of Emerging Technologies in Web Intelligence*, 2(1), 27-33

European University Association (2019). *Promoting active learning in universities: Thematic Peer Group Report*

Giannatelli, A., Tomasini, A. (2020). INSYSTED pedagogical framework – Instructional booklet. Politecnico di Milano – METID Learning Innovation. <https://doi.org/10.5281/zenodo.4085237>

Krathwohl, D. R. (2002). A Revision of Bloom's Taxonomy: An Overview. *Theory Into Practice*, 41 (4), pp.212-218

Slavich, G. M., and Zimbardo P.G. (2012). Transformational teaching: Theoretical underpinnings, basic principles, and core methods. *Educational Psychology Review* 24 (4), pp. 569-608

Sancassani S. et al. (2019), *Progettare l'innovazione didattica*, Pearson.

3. EDUGAME ROLE-PLAY

3.1 WHY A ROLE PLAY IN “EDUGAME PROJECT”

- To **engage the students**, enhancing learner **interest and motivation** in the content.
- To put them in a situation in which they have to **make decisions** both **applying knowledge**, and **considering values, perceptions, decision options**, and responding to feedback, improving cognitive learning.
- To apply concepts to **real life situations**.
- To improve **analytical and decision-making skills**,
- To **change views or attitudes** toward issues or people, and **empathy** toward others.
- To achieve **longer-term learning advantages**.

Finally, role-plays and simulations may promote higher quality **teacher-student relations** as learning **happens in a more relaxed, informal, and comfortable context** leading the learner to perceive the instructor through a more positive lens, in addition to the availability of timely feedback to the learner (Shaw, 2010; Wheeler, 2006).

A few studies have examined how simulations promote retention of learning by encouraging learners to employ multiple senses, take ownership of their role, and hence create more lasting and more easily recalled memories (Banikowski & Mehring, 1999; Hertel & Millis, 2002; Monahan, 2002).

Greenblat (1973) also asserts that an outcome and advantage of role-plays and simulations is increased **self-awareness and self-efficacy**.

A shared definition is “*gaming-simulation is a sequential decision-making exercise, whose basic function is to provide an artificial environment where some characteristics of a real situation are replicated, enabling players to follow up the consequences of their decisions with rapid response.*”⁵ In their foundational game studies text *Rules of Play*, Salen and Zimmerman (2004, 80) acknowledge that their definition of a game (“*a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome*”) considers RPGs a borderline case. While RPGs are widely recognized for their influence on many other games (e.g. Tychsen 2006), they are **apparently not game enough because they lack a quantifiable outcome** (Salen and Zimmerman 2004, 81). Jesper Juul, author of another influential game definition, likewise considers tabletop RPGs a borderline case: they are “*not normal games because with a human game master, their rules are not fixed beyond discussion*” (Juul 2003).

⁵ Other definition:

- A role-play simulation game is a **dynamic artificial environment** in which human 'agents' interact by playing roles with **semi-defined characteristics**, objectives and relations (social rules) to one another and within a specified scenario (set of conditions)”. (Llinser, Ree-Lindstad, Vold 2008).
- A **game does not intend to represent any real-world system**; it is a “**real**” system in its own right (Crookall, Oxford, Saunders, 1987).
- A simulation is a **representation of some real-world system** that can also take on some aspects of reality for participants or users. Key features of simulations are that they represent real-world systems; they contain rules and strategies that allow flexible and variable simulation activity to evolve; and the cost of error for participants is low, protecting them from the more severe consequences of mistakes (Crookall, Saunders, 1989).
- Roleplaying is the art of experience, and making a roleplaying game means creating experiences (Pettersson, 2006).
- A role-playing situation is a situation in which an individual is explicitly asked to **take a role not normally his own**, or if his own in a setting not normal for the enactment of the role. (Mann, 1956).
- “Role-playing is an interactive process of defining and re-defining the state, properties and contents of an imaginary game world. The power to define the game world is allocated to participants of the game. The participants recognize the existence of this power hierarchy. Player-participants define the game world through personified character constructs, conforming to the state, properties and contents of the game world.” (Zagal, Deterding 2018).

Gaming-simulations provide the player with the opportunity to develop the skills of **hypothesis-testing, logic, and inductive and deductive reasoning** indirectly through a sequential **decision-making** exercise whose basic function is to provide an **artificial but realistic environment** that enables players to experience the **consequences of their decisions** through immediate response (Angelides, p. 1998).

Thus, it is easy to view all simulation as activities which evolve around selected parts of the real or a hypothetical world. To a greater or lesser extent they take from the real or hypothetical world what the designers or participants deem appropriate. They can all be thought of as abstractions. Case-studies are generally less abstract and machine simulations are often more abstract. Whatever their degree of abstraction they are simplified representations which can be animated to aid our understanding. Its objective is to **enhance a comprehensive understanding of complex systems and to develop learning skills**.

3.2 CHARACTERISTICS OF ROLE-PLAY

Role-play involves not just the **examination and discussion of documentation** as with 'case-studies', but **requires participants to act out and improvise roles** and situations using a **given database as a point of departure**. The participants have to set out a sequence of events. They have to **move from 'outsiders' to 'insiders'**, moulding the data and shaping events as a spontaneous performance.

Role-play can often be a relatively simple and straightforward activity since it does not have to rely on a wealth of data and formal structure.

All that is required is for the participant to **accept a new identity, step inside someone else's shoes**, and **act and react as appropriately** as he is able. What may happen in role-play is anyone's guess; there are few formal restraints on the situation, even if the group involved may be aware of some general objectives.

The essential core of the activity in role-play is **understanding the situation of another person**. Participants are placed in a position in which they are given the **opportunity to 'feel'** what it is like to be 'on the spot'. They are confronted with what is at stake for the individual as well as for the group. Through direct involvement, it is hoped that they gain a **greater understanding of other roles and relationships**, as well as a better awareness of what they themselves are doing.

In summary, role-play may be seen as an activity which is generally more **open-ended** than other forms of simulation. It is concerned with individual enactments and group interaction for deriving insights, achieving empathy and developing skills rather than for solving problems. It can cover more fanciful situations and is open to very dramatic involvement. The emphasis tends to be on free-exchange and free-wheeling activities.

3.3 ROLE-PLAYING PURPOSES

1. **Diagnosis/evaluation**

To find out **how individuals react** in certain situations.

2. **Decision-making**

By working, or role-playing, through a number of options, participants can see a **range of outcomes** being generated. Although optimum solutions are not identified it is possible to increase the general appreciation of the **consequences of different actions**.

3. **Rehearsal**

By practising responses to certain situations it is hoped to improve an **individual's verbal adequacy and interpersonal skills**.

4. Attitudinal change

By acting out or dramatizing a situation, **new perspectives** can be significantly highlighted. The background to differences can be revealed and role-reversals can provide a radical basis for **reassessing misunderstandings and disagreements**.

5. Self-awareness

Through direct involvement with certain action sequences, the individual is confronted with a wider awareness of how others see her/him. A range of perceptions are forced upon her/him which in turn serve to increase or improve her/his self-awareness.

3.4 WHAT IS A «ROLE»?

The Merriam-Webster's Unabridged Dictionary defines a role as:

- (1) *a part or character played by an actor or actress,*
- (2) *(sociology) proper or customary function, the rights, obligations, and expected behaviour patterns associated with a particular social status.*

The Collins English Dictionary defines a role as "a part or character in a play, film, etc., to be played by an actor or actress, (psychology) the part played by a person in a particular social setting, influenced by his expectation of what is appropriate, usual, customary function."

3.5 WHAT ARE THE ROLES OF "ROLES" IN GAMES?

Roles can serve as a **part of the game instructions** and thereby serve to **shorten the explanation** of the game rules.

Roles encourage players to **become immersed** in the game experience.

Roles can be deliberately used to **mislead players**.

Roles may **deepen learning**.

Roles can **close the gap** between game play and reality.

3.6 BASIC ELEMENTS OF GAMING-SIMULATION

In addition to **roles and rules**, some experts identify typical elements of Role Plays:

SCENARIO is an outline of the plot of the game. It outlines starting conditions and describes circumstances leading into play. It deals with all aspects, i.e., economic, social, and political, which are either presented by text or supplemented with diagrams and illustrations. Role descriptions might be considered a part of the scenario, but are offered separately.

PULSE: an event or problem introduced to focus the player's attention on a single aspect of the problem. It may be either designed or player induced; predetermined, random or triggered by a certain action in the game.

STEPS OF PLAYS: the explicit progression of activity: there is a macro cycle in each cycle which includes four steps: initiation, policy, action, and evaluation. During the initiation, the players read the scenario, take into a cycle any pulses/events/issues that have occurred, and consider any new data available to them as a result of the previous cycle. During the action cycle, players make specific decisions according to a given order. During the evaluation phase of the cycle, all play stops and an intellectual discussion ensues, under the direction of the game operator which addresses two questions: What are the results of the cycle just completed? and How does this experience relate to the real-world problem? The next step is always recycling.

3.7 ANALYSIS OF ROLE PLAYS

Typologies of players

Bartle, Richard (1996), [Hearts, clubs, diamonds, spades: Players who suit MUDs](#). *Journal of MUD research* 1.1 : 19.

The players experience: Immersion

Bowman, S.L. (2018), Immersion and Shared Imagination in Role-Playing Games. In Zagal, José P. and Deterding, S. (eds.), *Role-Playing Game Studies: Transmedia Foundations*. New York: Routledge, 379-394.

Negotiation

Ogan, A.; KIM, J.; Aleven, V.; Jones, C. (2009), [Explicit social goals and learning: enhancing a negotiation game with virtual characters](#). In *AIED 2009: 14th International Conference on Artificial Intelligence in Education*, 51-58.

Different skills trained through role-playing

Bowman, S.L. (2020), [Educational Live Action Role-playing Games: A Secondary Literature Review](#). In .112-121

Cultural Heritage

Barandoni, C (2019), [Minoans. The Application of Games, Immersive Environments and Role-Playing in Cultural Heritage](#), Proceedings of the 22nd International Conference on Cultural Heritage and New Technologies 2017.

Champion E.M., [Role-playing and Rituals for Cultural Heritage-Oriented Games](#), DiGRA Conference (2015).

Wiener J.B., (2015), A Game of Tag can help Cultural Heritage, Academia.edu

Majewski J., (2015), Approaches to cultural heritage in role-playing games, Academia.edu

Online Role Play

Linser, R., Lindstad, N.R. & Vold, T. (2008). The Magic Circle - Game Design Principles and Online Role-play Simulations. In J. Luca & E. Weippl (Eds.), *Proceedings of ED-MEDIA 2008--World Conference on Educational Multimedia, Hypermedia & Telecommunications* (pp. 5290-5297). Vienna, Austria: Association for the Advancement of Computing in Education (AACE). Retrieved June 20, 2021 from <https://www.learntechlib.org/primary/p/29109/>.

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3.8 PARTNERS'S PREVIOUS EXPERIENCE

The total lack of experience of the partners (single people involved in the project) was particularly challenging, making a theoretical introduction by a Politecnico di Milano expert necessary.

4. DESIGN PHASE

4.1 DEFINITION OF TEACHING GOALS

Systematic course planning calls for **precise statements** of what a student should be able to do as a result of completing an assignment or course. Normally, **educational objectives** specify what **students should be able to do at the end of an activity** that they perhaps could not do (at least not as well) at the beginning. Great emphasis is placed, quite rightly, on **changes of behaviour** which can be derived from educational experiences.

The most common and one of the simplest ways of grouping objectives is in terms of **attitudes, knowledge and skills**.

Once learning objectives are specified, for example, in terms of:

- what is to be done;
- under what conditions; and
- to what level of competence or performance standards

then the **selection of an appropriate approach, teaching method and assessment procedure** becomes clearer.

The Role Play implemented within Edugame Project represents an opportunity for students to **develop a set of practical skills, to understanding the memory of a place, and to become aware of the complexity** of the actions behind the Cultural Heritage Management, Protection and Use, because of:

- the **plurality of issues and interests**;
- the **existing conflicts of interests** among stakeholders;
- the quantity and complexity of national and international **legislations**, in the area of culture, heritage, architecture and territory.

“Playing the game” students can realise **which are the roles they could have to play in the future** as real participants and executors of the heritage protection process, **the new roles emerging** along the way, and **the different stakeholders involved**. They can also test **communication strategies**.

4.1.1 EDUGAME ROLE PLAY LEARNING OUTCOMES

Students will be able to identify:

- the **stakeholders** involved in the process;
- their **roles, powers, limits, action restrictions, fields of action, interests, goals**;
- the **dynamism** among the stakeholders.

Students will apply:

- knowledge of **Theory of Architecture and Urban Design**;
- **Communication and Negotiation skills**.

Students will experience:

- a new **learning methodology** (active, interactive, in team);
- a **scenario** they will eventually explore in their professional activity;
- a **team building and communication activity** - drawing up a project in a team (meeting the requirements and looking for all the necessary information) and presenting the project to the stakeholders, calibrating and adapting information and communication according to the objectives;
- a **negotiation activity** among all the stakeholders to find suitable and innovative solutions: accepting proposals for improvement and criticism in a constructive manner, and demonstrating their project is well designed;

- a **conflict situation** to make them experience something they might face in their future activity as architects. In fact, stakeholders pursue different objectives, follow their own personal logic, have divergent opinions, and are subject to (often not known) limits and restrictions.

Students will test:

- their level of **knowledge** and **awareness** of:
 - **problems** connected with the protection and Management of CH;
 - **relationships** among the stakeholders involved;
 - the **timing** of the stakeholders' involvement, since they won't appear at the same time.
- their ability to:
 - **be real participants** in the heritage protection process,
 - **observe and argue**;
 - **communicate**;
 - **negotiate**.

4.1.2 ASSESSMENT

Following the Constructive Alignment Theory (See 1.2 A DIDACTICAL APPROACH TO DESIGN EDUGAME ROLEPLAYS), after an accurate formulation of the Intended Learning Outcomes, we had to design the **assessment strategies**, aware that assessment is not to be meant as "the final grade". Assessment is a **complex process**, which has to be integrated into the educational path. Effective assessment requires an understanding of the difference between **formative and summative assessment**. It is precisely the proper balance of these two types of assessment that will create a strong assessment strategy.

Formative assessment monitors student learning to provide continuous **feedback** throughout the learning process. It helps students to identify their strengths and weaknesses and to guide them where to focus. A Role-Play seems to be "the perfect occasion" for formative assessment: it provides the times, ways, and situations for students to **receive feedback** from the teacher, the peers, the observers, as well as the dynamics of the game that are consequences of the actions.

Summative assessment creates an **overview of students' learning** and on their **achievement of intended learning outcomes**. It is used to summarize learners' performance at the end of a learning process.

In the case of a Role-Play, it could be difficult to deliver a summative assessment, strictly related to the game phase, but, if the Role-Play is part of the learning strategies, chosen by the teacher for a specific course/program, it is possible to assess students about specific skills and knowledge acquired during the entire course/program.

It is essential that these two assessment types coexist in a learning path because they are complementary in terms of:

- **scope** (formative assessments usually tests a very limited topic, while summative assessment evaluates the overall learning);
- **output** (formative assessment provides the learners with an informal advice, a feedback on their work, while summative assessment generally provides a formal result, as an overall grade);

- **frequency** (formative assessment provide the learners with frequent feedback throughout the learning process in support of the learning outcomes, while summative assessment is given generally at the end of the learning process);
- **duration** (formative assessment is very quick and light, while summative assessment requires an appropriate length of time).

It is worth remembering that the way learners' performance is assessed has a strong impact on learning: a **well-balanced assessment strategy** improves learners' retention and helps to enhance transversal skills such as synthesis, analysis and critical thinking.

4.2 THE TARGET-GROUP'S CHARACTERISTICS

4.2.1 "PERSONAS" METHOD (in a nutshell)

"A "Persona" is a collection of realistic representative information which can include fictitious details for a more accurate characterization".

The adopted "Personas method" is aimed at **talking about the users** and at **representing users** in the design process.

"Personas" are fictional characters useful to reflect about user types and to understand user **characteristics, needs, goals, attitudes, interests** etc.

The value and functions of "Personas" can be listed as follows:

- ❖ **Examination of the comprehension about users:** the more we know about future users, the more they need the learning activity we are designing.
- ❖ **Users-centered:** Personas demonstrate the **needs**, the **context** and the **requirements** of users: the axis of the work for us.
- ❖ **To avoid conflict:** with Personas, when conflict of design appears, the design group can **adapt their decision** based on the model.
- ❖ **Management control:** Personas can help us develop the **most useful contents** with the **most useful approach**, instead of creating something that will never be used.
- ❖ **Prediction** of user behavior.
- ❖ **Time-saving:** Personas provide a way to replace some traditional user demands research method.

Personas strengthen the **focus on the end user, their tasks, goals and motivation**. Personas **make the needs of the end-user more explicit** and thereby can direct decision-making within design teams more towards those needs.

Personas have a role in helping designers to innovate new ideas but can also assist in validating new designs as they emerge. They can provide a valuable **user-centred input** early in the development cycle.

4.2.2 EDUGAME "PERSONAS"

Politecnico di Milano team prepared a Personas template with specific and focused fields and universities project partners filled in it, putting all the information useful to create a fictional character. The assignment was to try to imagine a real student, who might take part in the game.



LUCY EVANS

Mantova, Italy

ANAGRAPHIC INFORMATION

AGE
23

NATIONALITY
Italian

GENDER
Female

PERSONAL INFORMATION

Lucy lives with her family in the beautiful town.
Mantova, where she plays volleyball and is volunteer at the municipal kennel.

EDUCATION

2016 ● SECONDARY SCHOOL
SCIENTIFIC HIGH SCHOOL

2019 ● BACHELOR OF SCIENCE
ARCHITECTURAL DESIGN

LANGUAGES

ITALIAN

ENGLISH

OTHER

ATTENDED MASTER OF SCIENCE

<p>UNIVERSITY POLITECNICO DI MILANO</p> <p>TOWN MANTOVA</p> <p>SCHOOL ARCHITECTURAL DESIGN AND HISTORY</p>	<p>FIRST YEAR ATTENDED COURSES</p> <p>MECHANICS AND DESIGN OF STRUCTURES, THEORY OF PRESERVATION, ARCHITECTURAL DESIGN STUDIO, HISTORY OF ARCHITECTURE, AESTHETICS, SUSTAINABILITY AND THE BUILT ENVIRONMENT, ARCHITECTURAL DESIGN IN HISTORICAL CONTEXT STUDIO.</p>
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SPECIALISTIC KNOWLEDGE AND SKILLS

She/he has advanced knowledge, operative and understanding abilities regarding:

- the main techniques of preventative diagnostics for restoration,
- material constitution of objects and
- computer documentation systems for their state of conservation.
- the main cultural heritage conservation and restoration methodologies used for different types of heritage.

She/he is able to:

- create building designs and highly detailed drawings both by hand and by using specialist computer-aided design (CAD) applications,
- work around constraining factors such as town planning legislation, environmental impact and project budget,
- apply for planning permission and advice from governmental new build and legal departments,
- specify the requirements for the project.

The result of the activity are 3 “Personas”:



Mariana Carvalho


Braga, Portugal

SPECIALISTIC KNOWLEDGE AND SKILLS

She/he has very few knowledge, about the main techniques and methodologies of preventative diagnostics for restoration, cultural heritage conservation and restoration,

She/is able to:

- Will be able to work in the areas of Construction, urban planning, conception and design of the spatial framework of life of the population
- To do some studies, projects, plans, and consulting activities
- Management and direction of works.
- Create building designs and highly detailed drawings by hand and computerized design tools as well as geographic information systems
- know the legislation in force in the areas of architecture and planning



EWA KOWALSKA

Lublin, Poland

SPECIALISTIC KNOWLEDGE AND SKILLS

ANAGRAPHIC INFORMATION

AGE
23

NATIONALITY
Polish

GENDER
Female

LANGUAGES

POLISH

ENGLISH

OTHER

She/he has advanced knowledge, operative and understanding abilities regarding:

- basic programmes for architectural design
- evaluation of technical condition of historic building
- preparation of inventories
- searching for historic sources and documentation
- techniques of preventative diagnostics for restoration,
- building material analysis
- the main cultural heritage conservation and restoration methodologies used for different types of heritage.

She/he is able to:

- analyze the historic, technical, functional, environmental factors conditioning protection and use historic buildings
- create building designs and highly detailed drawings both by hand and by using specialist computer-aided design (CAD) applications,
- work around constraining factors such as town planning legislation, environmental impact and project budget,
- specify the requirements for the project.
- apply for planning permission and advice from governmental new build and legal departments.



Maria Rossi

Milano, Italy

She has advanced knowledge, operative and understanding abilities regarding:

- History and theory of architecture
- Urban design
- Structural design
- Sustainable approach with new technologies in the architectural and urban design
- Architecture and urban design related with problems of structural design
- Knowledge and skills to approach foreign cases of studies
- Conservation project connected with the abilities in the advanced methods of architectural survey
- Using of the BIM tools and methodologies

She is able to (according to the Dublin's descriptors):

- Managing the ICT instruments for the architectural design and the analyses of the existing buildings
- Working in group managing the conflicts
- Recognizing the main stockholders involved in the urban, architectural, and conservation project/process
- Acquiring the tools and the abilities useful to establish a good relationship with private architectural studio and to recognize the stakeholders.

4.2.3 IDENTIFIED TARGET GROUP

These 3 “Personas” let us pinpoint the characteristics of our users: **the students have completed the Bachelor of Science’s Degree in Architecture or Engineering.**

They are attending some of the following courses:

MONOGRAPHIC COURSES:

- History of Architecture;
- Urbanism;
- Buildings Materials;
- Modern Construction;
- Geotechnics and Foundations;
- Aesthetics;
- Revitalization of Historic Towns;
- Propaedeutic of Heritage Protection;
- Mechanics and Design of Structures; Sustainability and Build Environment;
- Rural Planning, Contemporary Architectural Design Theory;
- Parametric Design BIM Oriented Through: Revit + Dynamo or Grasshopper + Rhino;
- Heritage Recovery and Urban Rehabilitation;
- Structural Design.

STUDIOS:

- ❖ CONSTRUCTION AND SUSTAINABILITY DESIGN STUDIO (technological and environmental design; building physics and energy design);
- ❖ URBAN DESIGN STUDIO (urban design and urban planning);
- ❖ ARCHITECTURAL DESIGN STUDIO (architectural composition, architectural design, structure and earthquake resistance criteria);
- ❖ ARCHITECTURAL PRESERVATION STUDIO (urban, architectural and landscape preservation + survey and digital modelling).

They acquired or are acquiring:

SPECIALISTIC KNOWLEDGE

- ★ History and theory of architecture
- ★ Urban design
- ★ Structural design
- ★ Sustainable approach with new technologies in the architectural and urban design
- ★ Architecture and urban design related with problems of structural design
- ★ Conservation project connected with the abilities in the advanced methods of architectural survey
- ★ Techniques of preventative diagnostics for restoration
- ★ Building material analysis
- ★ Main cultural heritage conservation and restoration methodologies used for different types of heritage.

SPECIALISTIC SKILLS

- Analysis of the historic, technical, functional, environmental factors conditioning protection and use of historic buildings.
- Creation of building designs and highly detailed drawings both by hand and by using specialist computer-aided design (CAD) applications.

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- Work around constraining factors such as town planning legislation, environmental impact and project budget.
- Specification of the requirements for the project.
- Basic programmes for architectural design.
- Evaluation of technical condition of historic buildings.
- preparation of inventories.
- Search for historic sources and documentation.
- Approach of foreign cases of studies.
- Application for planning permission and advice from governmental new build and legal departments.
- Use of the BIM tools and methodologies.
- Managing the ICT instruments for the architectural design and the analyses of the existing buildings.

SOFT SKILLS:

- Working in a group, managing the conflicts.
- Recognizing the main stakeholders involved in the urban, architectural, and conservation project/process.
- Acquiring the tools and the abilities useful to establish a good relationship with private architectural studios and to recognize the stakeholders.

4.3. ROLE PLAY DESIGN

4.3.1 DESIGN PROCESS



4.3.2 MAIN PURPOSES OF THE GAME

EXTRACTED FROM THE APPROVED PROJECT DOCUMENTS

“Elaboration of an educational role-play game and 3 cooperative role-play games.

The subject of the game is the process in which the protection of historical objects takes place. This process is characterised by a conflict because the participants (stakeholders of historic building protection process) can have/have different and even conflicting goals.

The aim of this process is to reach a compromise among particular stakeholders.

Participants of the game are owners of historic buildings, users of historic sites, heritage conservators (conservation service), local community, tourists, authorities of various levels.

Particular stakeholders (participants of the game) have different authority to decide on the proceedings with the historic building and different competences related to protection of the value of such an object.

The aim of the game is to present the real process in which negotiations aimed at establishing the concept of the protection, management and use of historical objects are conducted.

Particular players will play different roles of main stakeholders participating in the elaboration of the concept of protection and management of the historical buildings.

Educational goal of the game is to familiarize the players (students) with the characteristics of roles (powers, competences, needs) of particular stakeholders participating in the game.

Game scenario will assume and describe the reality, reflecting the complexity of the real process in which the protection of historical objects takes place.

Thanks to this the participants of the game will realize the real conditions and will be aware of soft skills necessary for solving conflicts.”

4.4 DESIGN TOOLS

4.4.1 ROLE PLAY STORYBOARD

Storyboarding is a key activity: content-experts intertwine contents and activities, and the instructional designer can support them in monitoring the pedagogical approach applied and the designed learning framework.

The storyboard template must be organised so that information is easily accessible and the links between different contents and formats are clear for everyone involved.

EDUGAME Role-Play Storyboard is organised to support the content- expert in designing the activity, phase by phase.

GENERAL OVERVIEW

[A table to be filled at the end of the design process with all the main information in a concise form]

ROLE PLAY TITLE	
TARGET GROUP	https://drive.google.com/file/d/1IMYT05VpC4pO52OmxLjtt2aWM9TLsqIF/view?usp=sharing
GENERAL GOALS	https://drive.google.com/file/d/1rYxzEK5FVWwtMuZF3G7J-GDvvBWoEVVB/view?usp=sharing
DURATION	
PHASES	0-7 (see paragraph 4.6.)
...	

SIMULATED SITUATION DESCRIPTION

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Textual description:

[IT IS A TEXT THAT DESCRIBES THE STARTING SITUATION, THE CONTEXT AND THE SETTING, THE CHARACTERS AND THEIR POINTS OF VIEW, THE ACTIONS THAT THE CHARACTERS ARE CALLED TO PERFORM, THE CONFLICTS AMONG THEM, THE REGULATORY OBLIGATIONS, THE FINAL AND THE INTERMEDIATE GOALS, THE RULES, THE TIMING, THE DIDACTICAL OUTCOMES]

- .
- .
- .
- .

Overview:

[A TABLE TO RECAP THE TEXTUAL DESCRIPTION ACCORDING TO THE 5 CRITERIA]

WHERE (PLACE/PLACES)	
WHEN (TIME)	
WHAT (PROBLEM)	
WHO (INVOLVED PEOPLE)	
WHY (FINAL GOAL)	
RELATIONSHIPS AMONG PEOPLE	

CHARACTERISTICS AND TASKS OF THE ACTORS

[ONCE THE DESCRIPTION IS COMPLETE YOU CAN PROCEED WITH THE PUNCTUAL DESCRIPTION OF THE ROLES]

Role Naming	Characteristics (age/job description)	Tasks
Role 1:		
Role 2:		
Role 3:		
Role 4:		
Role 5:		
Role 6:		
Role 7:		

PHASES MANAGEMENT

[FROM THE GENERAL DESCRIPTION YOU DERIVE AND SPECIFY THE PHASES: DOES EVERYTHING TAKE PLACE DURING AN IN-PRESENCE LESSON OR IS THERE A PREPARATORY PHASE WHEN STUDENTS GET INFORMATION AUTONOMOUSLY OR WORKING IN TEAMS? HOW CAN THE TEACHER MANAGE THESE PHASES?]

Phase	Phase Management	Duration

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INFORMATION FOR PLAYERS

[EACH STUDENT / PLAYER MUST BE GIVEN PRECISE DIRECTIONS ON WHAT IS EXPECTED BY HIM/HER]

For each player

About me and my role	
About the context	
About the problem	
About the other roles	
About my objectives	

RUBRIC FOR OBSERVERS

[YOU CAN ALSO ENVISAGE THE ROLE OF OBSERVER/OBSERVERS]

RUBRIC FOR OBSERVERS		
Observed Role:		
	What is the Role doing?	How is the Role doing it?
01		
02		
03		
...		

RUBRIC FOR SELF-OBSERVATION

[AUTONOMOUS REFLECTION ABOUT PERSONAL CHOICES, TEAMS DYNAMICS, RESULTS MAY BE USED BEFORE a FINAL DEBRIEFING WITH ALL THE PLAYERS]

RUBRIC FOR SELF-OBSERVATION		
Role:		
	What did I do?	How did I manage it?
01		
02		
03		
...		

4.5. TESTING

Some tests were required during the design activity to verify that the design choices were going in the right direction. To test the correct design, different case studies were used.

4.5.1 TESTING OF THE ROLES (STAKEHOLDERS)

ROLE-PLAY APPLIED ON THE CASE OF THE CHURCH OF SAN VITALE IN RAVENNA

The basilica of San Vitale in Ravenna is one of the most representative buildings in the history of art and architecture of the Byzantine period founded by the emperor Justinian I in the mid-sixth century, and it is an UNESCO Site.

The building that can be seen today is also the result of the modifications and restorations that affected it in around 1400 years of its existence.



San Vitale - veduta dell'esterno
Fonte: Wikimedia CC-BY-SA-4.0

The property belongs to the Archdiocese of Ravenna-Cervia, and to the Vatican. Today the restoration and maintenance costs are borne by the Roman Church.

The control of the works is subject to both the CEI (Italian Episcopal Conference), an Institution of the Roman Church and the Soprintendenza, Office of the Italian State.

Until the mid-Nineties of the Twentieth century, the basilica, as well as all religious buildings on the Italian territory, was subjected to the control and financing of the Italian State on the basis of the “Concordato or Patti Lateranensi” (“Concordat or Lateran Pacts”), a special agreement established in 1929 between the Italian Reign and the Vatican.

The case is particularly interesting for its remarkable historical, artistic and religious values. It also represents an excellent example for understanding the dynamics of the management and restoration of the Italian monumental heritage, belonging to the World Heritage List.

Finally, the building is located in the historical center of Ravenna, representing a symbol and an asset primarily for local citizens.



San Vitale - veduta dell'interno
Fonte: Wikimedia CC-BY-SA-4.0

SIMULATED SITUATION DESCRIPTION

The Director of the Museum of the Basilica di San Vitale in Ravenna was obliged to close the Museum to the public for the second time this year, due to the restriction of Italian Government, DPCM November 3rd, 2020, to avoid the spread of Covid-19 pandemic.

He/she decides to take this opportunity to develop a virtual visit to the museum, available, as soon as possible, on a web platform.

He/she decides to announce a call for the assignment of a project for the virtual valorisation of the monument.

The total amount is XXX€ / (the cost will be estimated by the student)

The main goals are:

- The short-term strategy to guarantee the access to the monument (e.g. use of AVR for a virtual visit of the museum).
- A long-term perspective (e.g. digitalisation of the monument in order to develop a survey of the state of conservation of the monument).
- The study and the realization of a communication strategy for each level of user (from children to senior citizens).

The final user remains the recipient of all (or almost all) of the enhancement strategies to be implemented, even more so if considered not as a single entity but as composed of various targets, with different needs, expectations, and capabilities.

If we think about what they can be, there are so many and for each one we can think of something to attract them and offer ad hoc services and paths:







- Scholars and researchers
- Experienced individual visitors
- Individual visitors who came "by chance"
- Families with children

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- Italian tourist groups
- Groups of foreign tourists
- People with physical and intellectual disabilities
- Primary school classes
- Secondary school classes
- Religious tourism
- Citizens who enjoy the property in the non-paid parts

In the following table, the game roles presented during the online project meeting (November 13rd, 2020), related to the case-study “The Church of San Vitale in Ravenna”.

	 MUSEUM DIRECTOR	 ARCHITECT	 LOCAL COMMUNITY	 LOCAL BUSINESS OWNERS	 SUPRINDENDENCE	 DIOCESE DELEGATE
CHARACTERISTICS	He/she has to develop an alternative solution to let his/her museum been visited during the Covid-19 pandemic.	Atelier of associated architects, experts in CH restoration.	The monument and, especially, the surrounding area are parts of their daily life	Could be owner of food shops, tour guides, etc. Their works are strictly related to the monument.	Governmental body in charge to control the respect of CH.	He/she is in charge to safeguard the spiritual value of the place.
TASKS	<ul style="list-style-type: none"> - Let the museum earns money even though it has to be physically closed to the public - Avoid firing staff - Seize the opportunity to implement the virtual communication of the museum - Guarantee the cultural vocation 	<ul style="list-style-type: none"> - Develop a new strategy for the virtual visit of the museum 	<ul style="list-style-type: none"> - They still want to use the monument as a city place, avoiding paying for the ticket - They want to stay in the surrounding garden despite the pandemic: it's a safe place for children that wants to play at open air 	<ul style="list-style-type: none"> - If the museum goes virtual, they are afraid they will not earn money from tourists 	<ul style="list-style-type: none"> - Despite the particular benefit of each actor, it is has to guarantee the correct preservation, valorisation and management of CH. - It refers every action to the law in charge for each country. 	<ul style="list-style-type: none"> - Since the monument is owned by the Diocese of Ravenna-Cervia, it is still a religious place. This value is tangible in the place, but it has to be transferred also in the virtual visit of the place.

In the following table, a first proposal of the game roles for the very general Role-Play, output of the project:

Role	Characteristics (Restrictions, opportunities...)	Tasks (Main interest and objectives)
Role 1: Museum Board / Director	He/she has to develop an alternative solution to let his/her museum be visited during the Covid-19 pandemic.	<ul style="list-style-type: none"> - To let the museum earns money even though it has to be physically closed to the public - To avoid firing staff. - To seize the opportunity to implement the virtual communication of the museum - To guarantee the cultural vocation
Role 2: Architect	Atelier of associated architects, experts in CH restoration.	<ul style="list-style-type: none"> - To submit a proposal to the Call
Role 3: Owner		
Role 4: Official supervisors	Governmental body in charge to control the respect of CH.	<ul style="list-style-type: none"> - Despite the particular benefit of each actor, it has to guarantee the correct preservation, valorisation and management of CH.

		- It refers every action to the law in charge for each country.
Role 5: Local Business Owners	Could be owner of food shops, tour guides, etc. Their works are strictly related to the monument.	- If the museum remains closed or goes virtual, they are afraid they will not earn money from tourists.
Role 6: Local Community	The monument and, especially, the surrounding area are parts of their daily life.	- They still want to use the monument as a city place, avoiding paying for the ticket. - They want to stay in the surrounding garden despite the pandemic: it's a safe place for children that wants to play at open air.



San Vitale - veduta del mosaico: Il sacrificio di Abramo
Fonte: Wikimedia CC-BY-SA-4.0

4.6 DEFINITION OF THE STRUCTURE (GAMES PHASES)

The Role Play design went on with a focus on the phases and the games mechanism. The following proposal was shared during the last 2020 web meeting (December 21st) and completed during 2021, thanks to all partners' contributions.

// PHASE 0: Preparation:

- Characterisation of the monument/site and its conservation status
- Critical analysis of the condition of the site
- Summary of the analysis

// PHASE 1: Assignment of roles and start of activities

// PHASE 2: Information collection and strategy development

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// **PHASE 3:** Public debate

// **PHASE 4:** Information gathering and strategy development

// **PHASE 5:** First evaluation

// **PHASE 6:** Send the responses to the call by the architects

// **PHASE 7:** Final debate in the presence of the jury and the public Role Play

4.7 TESTS OF THE STRUCTURE: PORTUGUESE AND ITALIAN ROLE-PLAY PILOTS

Course title: Drawing “How to promote the street after COVID?”	Workshop title: “Antico e Nuovo”
Main content: Architecture and Urbanism	Main content: a project for the valorisation of Sabbioneta, a Renaissance ideal city under UNESCO protection.
Prof. Claudia Beato - Universidade da Beira Interior, Portugal	Prof. Nora Lombardini - Politecnico di Milano, Italy
	4 CFU (400h)
Second semester of A.Y. 20-21 and 21-22	Second semester of A.Y. 20-21 and 21-22
25 students - enthusiastic	50 students - interested
face to face	blended way
Stakeholders: Client, City Hall, Heritage Chamber, and the Architect office	

Role-Play Educational Game "Management of heritage site"

Developed within project

***EduGame: Innovative Educational Tools for Management in Heritage Protection -
gamification in didactic process***

Co-funded by the Erasmus+ Programme of the European Union

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