

# BASIC HEALTH AND SAFETY SKILLS ON WORKS AT HEIGHT THROUGH SERIOUS GAMES

IO5\_Roadmap



March 2020



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



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



ERASMUS+ Programme  
Key Action 2 | Call 2017  
Cooperation for Innovation and the Exchange of Good Practices

Project Number:  
2017-1-ES01-KA202-038262

Partnership:

- Fundación Laboral de la Construcción (Spain)
- Institut de Formation Sectoriel du Bâtiment (Luxembourg)
- Open Universiteit Nederland (Netherlands)
- Westdeutscher Handwerkskammertag (Germany)
- Scuola Costruzioni Vicenza Andrea Palladio (Italy)
- Chamber of Construction and Building Materials Industry of Slovenia (Slovenia)
- Centre Ifapme Liège-Huy-Verviers (Belgium)

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

# INDEX

PART 1 - DESCRIPTION OF THE PROJECT .....	2
PART 2 - PARTNERSHIP .....	3
PART 3 - CONTEXT AND OBJECTIVES OF THE MOU .....	3
PART 4 - ORGANIZATIONS SIGNING THE MEMORANDUM OF UNDERSTANDING .....	4
PART 5 - OTHER ORGANIZATIONS THAT MIGHT ENDORSE THIS MOU .....	5
PART 6 - QUALIFICATION COVERED BY THIS MOU .....	6
PART 7 - LEARNING OUTCOMES .....	7
PART 8 - PRESENTATION OF THE GAMES .....	12
PART 9 - ASSESSMENT DOCUMENTATION, VALIDATION AND RECOGNITION .....	12
PART 10 - VALIDITY OF THIS MOU .....	12

## PART 1 - DESCRIPTION OF THE PROJECT

The project *Upp\_games: basic health and safety skills on works at height through serious games* (2017-1-ES02-KA202-038262) is a project funded under the Erasmus+ Programme. Its duration is of 24 months (December 2017-November 2019), with a three-month extension.

Upp-games comes to continue the work done in a previous project *H&S games: serious games on Health and Safety for mobile learning* (2015-1-ES02-KA202-016003). In this project an application for mobile devices (APP) was developed to improve the learning of basic skills in H&S through educational games.


*Upp\_games is focused on developing an app for mobile devices for learning occupational risk prevention in works at height.*

### Common objectives

Tackling Health and Safety risks on works at height using open online training tools which allow construction industry workers to acquire autonomous knowledge, skills and competences on occupational risks prevention associated to this type of works:

- Defining a framework of theoretical and practical learning of the main hazards, risks factors and preventive measures for works at height, counting on the trainers, students and experts' participation from the beginning of its creation. (***Set of learning outcomes on prevention of hazards***).
- Proposing an innovative educational approach developing, testing and implementing training games through an application for mobile devices (***APP***).
- Designing a roadmap that establishes the ***standards*** and the necessary steps to recognize the content of the proposed training, in accordance with the European Qualifications Framework (EQF), guarantying the mutual recognition of the competences in the participant countries. It will be done in accordance with the recommendations of the European Quality Assurance in Vocational Education and Training (EQAVET).
- Facilitating the autonomy, exploitation and transfer of learning processes and training over time, even beyond the end of the project's life cycle, through a complementary methodology that allows the adaptation and improvement of the games created. (***Guide for trainers***)

The ICT used applied to training offers important benefits, beyond the ubiquity of access that applications for mobile devices allow. The development of products and results in Upp\_games will allow ***workers*** in the construction industry to easily acquire and/or improve their knowledge and skills in H&S issues, using the new application focused on works at height.



The **VET providers** in construction industry will also benefit since they will be able to modernize their didactic contents with this new tool, better adapted to each company needs.

## PART 2 - PARTNERSHIP

The coordinator is Fundación Laboral de la Construcción (FLC) (Spain), and the partnership is made up of several organizations from six countries: Institut de Formation Sectoriel du Bâtiment (IFSB) (Luxembourg), Open Universiteit Nederland (OUNL) (The Netherlands), Westdeutscher Handwerkskammertag (WHKT) (Germany), Scuola Costruzioni Vicenza Andrea Palladio (SCVAP) (Italy), Chamber of Construction and Building Materials Industry of Slovenia (CCIS) (Slovenia) and Centre IFAPME Liège-Huy-Verviers (Belgium).

## PART 3 - CONTEXT AND OBJECTIVES OF THE MOU

The Memorandum of Understanding (MoU) explained below is a proposal for sustainability whose purpose is to ensure the quality of the project results through the games developed in the application, which is a tool that facilitates transparency, transfer and recognition of skills and competences with a view to achieving basic health and safety at height competences in the construction sector.

The MoU conforms a framework for cooperation among institutions and aims at establishing mutual trust between the partners. In it, partner organizations mutually accept their respective criteria and procedures for the sustainability of the results of the Upp Games Project, quality assurance, assessment, validation and recognition of knowledge, skills and competence about the purpose of the final games decided and the theoretical contents.

The partner countries show similarities regarding the lack of an adequate training for health and safety at height in the construction sector. The recognition of skills acquired through informal learning is necessary. The training requirements in health and safety framework in the construction sector is already a well-covered field of education but leaves out EU countries. The adaptation of the existing methods will be a good approach to a common skills training (gamification).

Additionally, non-adequate acquisition of risk prevention skills - due to the learning method, among others- can be found on the European context in the construction sector so far. This hinders mobility of staff in the internal market.

The project is relevant and important for the construction sector because especially SMEs need skilled personnel currently not available. The future of the labour market looks different in the partner countries, but a further internationalisation may be expected in all partner countries, leading to a higher demand for well-trained professionals, not only craft professionals but also trained in health and safety.

Upp Games offers a significant innovative added value towards a new target group, as it transfers the successful training technic “Gamification”, which was already successfully

implemented in the preceding Health&Safety Project. One special utility is the training process provided by this technic with migrants or workers with few skills.

## PART 4 - ORGANIZATIONS SIGNING THE MEMORANDUM OF UNDERSTANDING

Organization 1	
Country	Spain
Name	Fundación Laboral de la Construcción (Flc)
Address	Calle Rivas Nº25, 28052 Madrid
Telephone	+34 91 398 45 00
E-mail	
Website	www.fundacionlaboral.org
Contact (Name, position)	Enrique Corral Álvarez Director General

Organization 2	
Country	Luxembourg
Name	Institut de Formation Sectoriel du Bâtiment (IFSB)
Address	ZAE Krakelshaff, Bettembourg
Telephone	+352 26 59 56 46
E-mail	
Website	www.ifsblu
Contact (Name, position)	Alexis Sikora Head of the Construction Unit

Organization 3	
Country	Netherlands
Name	Open Universiteit Nederland (OUNL)
Address	Valkenburgerweg 177, Heerlen
Telephone	+31 6 284 287 82
E-mail	
Website	welten-instituut.ou.nl
Contact (Name, position)	Jeroen Storm Project Manager

Organization 4	
Country	Germany
Name	Westdeutscher Handwerkskammertag (WHKT)
Address	Volmerswerther Straße 79, Düsseldorf
Telephone	+49 211 3007 707
E-mail	
Website	www.whkt.de
Contact (Name, position)	Peter Dohmen Project Manager



Organization 5	
Country	Belgium
Name	Centre IFAPME Liège-Huy-Verviers ASBL
Address	Boulevard Sainte-Beuve, 1 - Liège
Telephone	+32 4 229 84 98
E-mail	
Website	www.centrelhv.ifapme.be
Contact (Name, position)	Caroline Bricteux Project Manager

Organization 6	
Country	Slovenia
Name	Chamber of Commerce and Industry of Slovenia (CCIS)
Address	Dimiceva street 13, Ljubljana
Telephone	+ 386 1 5898 246
E-mail	
Website	www.gzs.si/zgigm
Contact (Name, position)	Valentina Kuzma Senior Project Manager

Organization 7	
Country	Italy
Name	Scuola Costruzioni Vicenza Andrea Palladio (SCVAP)
Address	Viale Cricoli 57, Vicenza
Telephone	+39 444 544 395
E-mail	
Website	www.centroedilevicenza.it
Contact (Name, position)	Lisa Pavan Project Manager

## PART 5 - OTHER ORGANIZATIONS THAT MIGHT ENDORSE THIS MOU

State Authorities
Ministry of Education
Ministry of Labour
Labour offices
Labour health and safety inspection departments
Regional and local authorities
Regional authorities for planning and urban management
County councils
Chambers
Chambers of Skilled Crafts
Chambers of Commerce and Industry
Chambers of Architecture
Professional associations and unions
Labour Unions



Company representatives
Associations of construction companies
Regional constructors and promoter institutions
Prevention companies
<b>Educational institutions</b>
VET schools
Training Centers
Research institutions
<b>Businesses</b>
Big construction companies
SMEs
Consultancies
<b>Professionals</b>
Managing Directors of SMEs
Managers/Executives
Craftsmen
Architects
Employees
Young professionals
Trainers/Teachers/Instructors
<b>Other</b>
Time-sharing companies
Mutual insurance companies
Migrant workers organizations
Technological institutes
Construction workers

## PART 6 - QUALIFICATION COVERED BY THIS MOU

EQF- Level	Knowledge	Skills	Responsibility and autonomy
<b>2</b>	Basic factual knowledge of a field of work or study.	Basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools.	Work or study under supervision with some autonomy.
<b>3</b>	Knowledge of facts, principles, processes and general concepts, in a field of work or study.	A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information.	Take responsibility for completion of tasks in work or study; adapt own behaviour to circumstances in solving problems.



4	Factual and theoretical knowledge in broad context within a field of work or study.	A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study.	Exercise of self-management within the guidelines of work or study contexts that are usually predictable but are subject to change; supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities.
---	---	--	--

## PART 7 - LEARNING OUTCOMES

The mini-games included in the App are aimed to facilitate construction workers to acquire and/or reinforce knowledge, skills and competences in several learning outcomes, selected for their importance in the prevention of occupational risks for those workers in working at heights.

They include a broad list of issues needed to be known by workers to prevent accidents/incidents and/or minimise their consequences, if happen.

The selected ones have been the following:

1. Working safely at heights.
2. Wear proper personal protective equipment.
3. To safely work by collective protection.
4. Falling of objects.
5. Safety signs.

The content of each learning outcomes is detailed below.

### **a) Working safely at heights**

#### *Definition*

Prevent hazardous situation when working in any place where a person could fall a distance liable to cause personal injury.

#### *Objective*

To make learners aware of the necessary precautions to be undertaken to avoid risks when working on ladders, roofs, lifting platforms, scaffoldings or any circumstance that exposes workers to a risk of a fall that is reasonably likely to cause injury to himself or other persons around him.



Knowledge	Skills	Competences
<p>The learner will know:</p> <ul style="list-style-type: none"><li>• How to access equipment: stepladders, ladders (pole, extension), scaffolding.</li><li>• How to work at heights and use work access equipment safely: regular inspection; check for broken, damaged or missing components; responsible use; consideration of adverse weather conditions; and proper training.</li><li>• The potential dangers: falling tools, equipment and materials, persons falling from height (injuries to themselves and others).</li></ul>	<p>The learner will be able to:</p> <ul style="list-style-type: none"><li>• Identify legislation relating to working at heights.</li><li>• Identify types of access equipment.</li><li>• State safe methods of use for access equipment.</li><li>• Recognize hazards of working at height:<ul style="list-style-type: none"><li>◦ List typical accidents and injuries related to work at heights in the workplace.</li><li>◦ Recognize other hazards where workers are exposed to the hazard of falling from heights (i.e. into water, machinery, electrical equipment, hazardous substances or objects).</li></ul></li><li>• Identify situations in which bump lines, barriers, guardrails and safety nets are needed.</li><li>• Identify the regulatory requirements for bump lines, barriers, guardrails and safety nets.</li><li>• Identify and assess the most suitable equipment (ladder, lifting platform, scaffoldings) to access a given work at heights.</li><li>• Identify and assess the most suitable Personal Fall Protection Equipment.</li><li>• Determine the fall distance to prevent a worker from striking the ground.</li></ul>	<p>The learner will have the necessary knowledge and skills to:</p> <ul style="list-style-type: none"><li>• Use the hierarchy of controls, identify the different types of equipment that may be available to safely perform a variety of tasks at heights (including Mobile Elevating Work Platforms), scaffolds, ladders and suspended access equipment, with certain level of autonomy.</li><li>• Properly and responsible use and maintain the different types of personal fall protection equipment needed to safely work at heights on work access equipment and platforms.</li><li>• Be aware that if you are asked to use work access equipment, platforms, or similar equipment in your workplace, you may need additional workplace specific and/or equipment specific information, instruction or training to performance with autonomy and responsibility.</li></ul>

## b) Wear proper personal protective equipment

### Definition

To make learners able to identify the need for Personal Protective Equipment (PPE) in construction site, choose the correct equipment and properly maintain it.

### Objective

Players will learn to:

- Identify the basic potential hazard in building site.
- Associate the correct PPE according to the specific circumstances / risk assessment.
- Pay attention to make proper maintaining and storage of PPE.
- Pay attention to the safety signs on site and to the site managers.

Knowledge	Skills	Competences
<p>The learner will know:</p> <ul style="list-style-type: none"> <li>• Different PPE and the most suitable to wear according to the specific circumstances/risk assessment and the legislation covering use of PPE.</li> <li>• Different characteristic and proper maintenance of the following PPE: head, eye and ear protection, face/dust masks, breathing apparatus, high visibility clothing, safety footwear, gloves, harnesses.</li> </ul>	<p>The learner will be able to:</p> <ul style="list-style-type: none"> <li>• Identify the different types of PPE used in the specific workplace.</li> <li>• Select the correct PPE to prevent exposure and personal injury according to the specific hazard.</li> <li>• Properly wear PPE.</li> <li>• Properly store and maintain of PPE.</li> </ul>	<p>The learner will be able to performance with <b>responsibility</b> and <b>autonomy</b> regarding to:</p> <ul style="list-style-type: none"> <li>• PPE legislation.</li> <li>• Common safety hazards where PPE is required.</li> <li>• Requirements and limitations for PPE.</li> <li>• Maintenance and storage of PPE.</li> <li>• Importance of checking and reporting damaged PPE.</li> <li>• Safety signs on site and the identification of site managers' instructions.</li> </ul>

## c) To safely work by collective protection

### Definition

To work on a site and be aware of the main hazards.

Prevent eventualities related to occupational hazards in the surroundings facilities and conditions of the designated work(s) with the help of the collective protections.

### Objective

- To know the most common collective protection methods, systems and equipment.
- To be able to visually identify if these protection methods are properly installed.



- To choose the appropriate action to avoid risks depending on the particular situation.

Knowledge	Skills	Competences
<p>The learner will know:</p> <ul style="list-style-type: none"> <li>• Recognising the most common collective protection systems.</li> <li>• Describing the most common CPE in the work site.</li> </ul>	<p>The learner will be able to:</p> <ul style="list-style-type: none"> <li>• Identify the protection methods, based on the characteristics of the work to be done, the working area and the risk related.</li> <li>• Distinguish the minimum elements and the characteristics of the collective protection equipment, based on the risks to be protected.</li> </ul>	<p>The learner will acquire certain level of responsibility and autonomy regarding to:</p> <ul style="list-style-type: none"> <li>• Be responsible of their own safety as well as security of others.</li> <li>• Use of CPE and the correct installation of them.</li> <li>• Act and react regarding the risks and the corresponding collective protection equipment, consultation and involvement if needed.</li> </ul>

#### d) Falling of objects

##### *Definition*

Prevent eventualities related to occupational hazards in the surroundings, facilities and conditions of the designated work(s) in the areas with potential falling or flying objects.

##### *Objective*

- To know the warning indicator and signs regarding to the falling objects.
- To be able to visually identify the correct PPE for entrance in the area with potential falling or flying objects.
- Ability to select the proper fall protection equipment.
- To choose the appropriate action to avoid the risks that cause objects to drop and potentially injury people (e.g. storage, connection, etc.).

Knowledge	Skills	Competences
<p>The learner will know:</p> <ul style="list-style-type: none"> <li>• Recognising the most common warning indicator and signs, PPEs and risks regarding to the falling objects.</li> <li>• Describing the most common fall protection equipment in the work site related to identify risk.</li> </ul>	<p>The learner will be able to:</p> <ul style="list-style-type: none"> <li>• Identify the signification of the signs and PPEs related to falling objects based on their characteristics visually.</li> <li>• Distinguish the risks generated by each one, based on the characteristics of the area of work (with</li> </ul>	<p>The learner will acquire certain level of responsibility and autonomy regarding to:</p> <ul style="list-style-type: none"> <li>• Be responsible for his/her own safety as well as the security of others on the falling objects.</li> <li>• Act and react in relation to the identified risk.</li> </ul>



	potential of falling objects, storage on high level, drop of the tools etc.)	
--	--	--

### e) Safety signs

#### Definition

To prevent occupational accidents related to the occupational hazards in the surroundings, the facilities, and conditions of the building site.

#### Objective

- To know the most common safety signs in the working site.
- To identify and distinguish the nature of the different safety signs.
- To keep in mind the importance of the signs and their signification to avoid accidents
- in the work site.

Knowledge	Skills	Competences
<p>The learner will know:</p> <ul style="list-style-type: none"> <li>• Hazards and dangerous situation on the building site.</li> <li>• Significance of the safety signs on site.</li> <li>• Specific sign that must be placed on site.</li> <li>• Sign to warn concerning the present hazards.</li> <li>• Signification of the signs: their indicative nature.</li> </ul>	<p>The learner will be able to:</p> <ul style="list-style-type: none"> <li>• Identify the basic potential hazard in building site.</li> <li>• Pay attention and respect the significance of the safety signs on site.</li> <li>• Associate the correct risk/interdiction according to the specific safety signs.</li> <li>• Identify the specific sign that must be placed on site to warn concerning the present hazards.</li> <li>• Identify the places on the building site according to the sign signification.</li> </ul>	<p>The learner will acquire certain level of responsibility and autonomy regarding to:</p> <ul style="list-style-type: none"> <li>• Be aware about the dangerous situation on the building sites.</li> <li>• Be aware about significance of the safety signs on site.</li> <li>• Respect the signification of interdiction signs according to the specific safety ones.</li> <li>• Avoid working in the area or workplace where the access is restricted by the signs.</li> <li>• Be aware about significance of the safety signs on site to warn concerning the present risks.</li> <li>• Respect the indication of the signs, its indicative nature.</li> </ul>



## PART 8 - PRESENTATION OF THE GAMES

The mobile game UPP GAMES is designed as one of the didactic materials to be used in modern learning tool used for example in flipped classroom. It is designed for autonomous use by trainees. The mobile application is also accompanied by an explanatory guide for trainers, which is explaining the pedagogical use and technological exploitation.

The main purpose of the game is to motivate to safe behaviours by analysing the possible obstacles to safety and establishing a system which awards the correct behaviours. For this reason, Upp Games App will provide a total of 15 mini games embedded in 6 short interactive stories (or levels). The overarching narrative follows the main character: John, who works at a building site. During the game the player makes choices (in the role of John) that affect the course of the story. In this way, the player is forced to think about safety when working at height and is thus encouraged to reflect on his or her own behaviour. The game uses 'feedback loops' to teach the player safety knowledge. This means that not only does the player receive feedback when he or she makes a wrong decision, but after receiving the feedback the player must rethink the situation and can make a new choice. This means that there are no 'wrong' answers: even if a player makes the wrong choice, he or she will gain some new knowledge.

The 6 levels are represented by semi finalized 5 floors and roof in building under construction and after successfully completing a mini-game in one level, a player will receive the a gratulation notification "you have successfully finished this level". The more mini games the player completes the more beautiful and complete the building will become.

## PART 9 - ASSESSMENT DOCUMENTATION, VALIDATION AND RECOGNITION

By signing this Memorandum of Understanding we confirm that we have agreed on the procedures for assessment, documentation, validation, and recognition and agree on how these are done.

## PART 10 - VALIDITY OF THIS MOU

This Memorandum of Understanding is valid from the end of the project until five years later, may be renewed in subsequent updates of the project or in a new one.

All the organizations that have signed this Memorandum commit themselves to disseminate the project, its products, and its results to all potential stakeholders after its completion to keep this commitment updated and in force.

**Leader:**



**FUNDACIÓN LABORAL DE LA CONSTRUCCIÓN**  
Spain

**Partners:**



**INSTITUT DE FORMATION SECTORIEL DU BÂTIMENT**  
Luxembourg



**CENTRE IFAPME LIEGE-HUY-VERVIERS**  
Belgium



**OPEN UNIVERSITEIT NEDERLAND**  
Netherlands



**WESTDEUTSCHER HANDWERKSKAMMERTAG**  
Germany



**SCUOLA COSTRUZIONI VICENZA**  
Italy



**CHAMBER OF CONSTRUCTION AND BUILDING  
MATERIALS INDUSTRY OF SLOVENIA**  
Slovenia