<table>
<thead>
<tr>
<th>TITLE OF THE SCENARIO</th>
<th>Learning the chemical elements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Keywords</strong></td>
<td>Chemistry, periodic table, experimental sciences</td>
</tr>
<tr>
<td><strong>To whom do I want to teach?</strong></td>
<td></td>
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</tbody>
</table>
| Age Range and grade of the learners | * 1st and 2nd grade of non-compulsory secondary education, specialization in Sciences / technical Sciences (age: 16-18)  
* 1st year Chemistry college students |
| Learner special characteristics | * Students interested in science, especially Chemistry (either at an academic or a personal level)  
* Students meeting problems for memorizing the valence of elements  
* Students who are not interested in Chemistry |
| **What do I want to teach?** | |
| Learning subject / field / skills | *Chemistry  
* Formulation, oxidation numbers, anions and cations |
| Specific Goals | * To get acquainted with the elements of the periodic table  
* To learn the oxidation numbers of the main elements in the periodic table  
* To understand the oxidation number according to properties |
| **How do I want to teach?** | |
| Learning metaphor that can support the learning objectives | |
| Acquisition (I will transmit / present / explain content to the learners) | ☐ ☐ ☐ ☐ ☒ ☒ |
| Imitation (I will show to the learners how to do things related to this subject / content, i.e. I will be a model for them) | ☐ ☐ ☐ ☒ ☐ |
| Discovery (I will provide the necessary artifacts for the learners to find out / discover a specific concept / knowledge on their own. I will organize guiding activities and provide tips) | ☐ ☐ ☐ ☒ ☐ |
| Participation (I will organize sessions in which learners will discuss, share and / or collaborate for learning a specific subject / content and I will facilitate the interaction between them) | ☐ ☒ ☐ ☐ ☐ |
| Experimentation (I will organize activities in which learners will understand, learn how-to, practice, and / or exercise) | ☐ ☐ ☐ ☒ ☐ ☐ |
| **Description of the game** | |
| Narrative description of the game plot | In a Chemistry lab, a student has to discover which experiment has triggered an explosion. To do so, he/she will need to conduct several tests of knowledge. When s/he gets it right, s/he obtains his/her own laboratory with the materials that s/he obtained along the game. |
| Goals | To discover which experiment has triggered an explosion in the lab. |
| Characters | * The student  
* Romi, a scientist who accompanies him/her in the adventure, as well as introduces and evaluates the knowledge tests |
| Scenes | * The lab entrance  
* Recognizing images, symbols and elements  
* Classification of elements: metals, non-metals, transition materials  
* Real experiment through a book  
* Questions on the experiment and behaviour of elements  
* End of the game: discovery of the experiment and of the prize |
| **Learning settings** | |
| **Estimated time** | |
### Narrative Description of learning activities - step by step organization and structuring

<table>
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<th>Before the game:</th>
<th>During the game:</th>
<th>After the game:</th>
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<td>Students get familiar with the periodic table, the oxidation numbers, etc.</td>
<td>Students play individually or in pairs (by discussing and make decisions together). Furthermore, a class activity could be conducted, i.e. experiments.</td>
<td>Questions activity</td>
</tr>
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#### How will I evaluate students?

**Evaluation approach**
- *Class discussion* - 10%
- *Exam* - 50%
- *Evaluation embedded in the game* - 20%
- *Classroom activities* - 20%

**Total: 5-10h**

#### What will learners need in order to achieve learning objectives?

**Prerequisites**
- *To be acquainted with the periodic table and the oxidation number*
- *To be acquainted with the formulation rules*
- *To be acquainted with the rules of behaviour in a chemistry laboratory.*

**Settings and materials**
- *A laboratory with the necessary material to carry out experiments*
- *An environment that allows dialogue between teacher and students and between students.*

#### What will learners need in order to achieve learning objectives?

**Applications involved**
- **Mandatory**
  - `<e-Adventure>`
  - Flash Player
- **Optional**
  - --

**Infrastructure / equipment**
- **Mandatory**
  - *Internet connection*
  - *One laptop / computer by student*
- **Optional**
  - --

**Other things to consider**
- *The game is only available as a demo for now. The final version will last longer (for one hour approximatively).*
- *The idea is that students play individually from home, although it is possible to include the game in a collective classroom activity.*