**Learning scenario with MARG - Template**

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| PART 1: General information | | |
| Title of the scenario: | The role of women in the development of computer science | |
| Keywords: | Computer Science, ICT, Programming, Gender Equality | |
| Name(s) of the scenario’s creator(s): | Alexandros Kofteros | |
| [Creative Commons License](https://creativecommons.org/licenses/?lang=en) of the scenario: | Attribution | Attribution-NoDerivs |
| Attiribution-ShareAlike | Attribution-NonCommercial |
| Attribution-NonCommercial-ShareAlike | Attribution-NonCommercial-  NoDerivs |
| Estimated duration of the scenario’s activities: | 3x40 | |
| Age range of learners: | 10-12 years old | |
| Learners’ special characteristics: (i.e. immigrants, special needs) | Scenario is designed for all students, including students with disabilities | |
| Learning subject based on your curriculum to which the scenario relates: | Design & Technology  Cross - Curricular | |
| To which Sustainable Development Goal (s) does the scenario relate to : (highlight it/them) | { } No Poverty | { } Industry, Innovation and infrastructure |
| { } Zero Hunger | { } Reduced Inequalities |
| { } Good Health and Well-Being | { } Sustainable Cities and Communities |
| { } Quality Education | { } Responsible Consumption and Production |
| {X}Gender Equality | { } Climate Action |
| { } Clean Water and Sanitation | { } Life Below Water |
| { } Affordable and Clean Energy | { } Life On Land |
| { } Decent Work and Economic Growth | { } Peace, Justice and Strong Institutions |
|  | { } Partnerships For The Goals |
| Which 21st century skill(s) does the scenario involve:  (highlight it/them) | {X} Information and data literacy | { } Critical thinking, |
| {X} Communication | { } Active citizenship |
| {X} Collaboration | { } Respect for differences |
| { } Problem solving |  |

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| PART 2: Learning outcomes of the scenario | |
| In terms of knowledge | The learner knows and understands:   * The history of computers, from 2200 BC to today * The important role of women in the development of computers as means to enable calculations * Mathematicians with significant impact on global knowledge |
| In terms of skills | The learner is able to:   * Assemble analogue computer * Assemble a small-scale computer * System Analysis & Programming |
| In terms of competences | The learner is expected to exhibit:   * Critical thinking and problem solving * Information Technology Application * Emotional Intelligence |

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| PART 3: Description of the game | |
| Narrative description of the game plot: | A computer history timeline is broken into pieces and scattered inside the premises of the school, in various spots and/or on the walls outside classrooms. Each part of the timeline is represented on the Taleblazer platform by an ‘agent’, enabling the device to display a portrait of a significant event or person that had a profound impact on the history of computers, from the Abacus to present-day computers. Students assume the role of “time travelers” and they have to assemble the history of computers, otherwise they might “disappear” from the present time.  If they skip or miss an important person, then the next one might have a very different development (ie without the Napier Bones and Pascaline, Ada Lovelace might not have been inspired to analyse the machine designed by Babbage). |
| Game objectives: | Gather information, from a starting point to the next points in the timeline, using data and hints on the next part of the timeline, in order to assemble all the parts correctly. |
| Does the scenario refer to a specific location? If yes, specify. If no, write everywhere. | Everywhere |
| Characters: | A child with the same age as the players |
| Scenes: | The game consists three stages/scenes:   1. An introduction where the timeline is broken into pieces from an unfortunate event: a little creature (can be depicted by a light source) unwittingly upsets the timeline, scattering all computer history in pieces (this can be shown with a simple animation). A narration or even text can indicate the player (students) as a Time Agent, with the quest to gather all the missing pieces to restore the timeline. 2. Students as time travellers that have to move within the school or environment to assemble the timeline. The first piece of the puzzle is Ada Loveloce in 1815, daughter of Lord Byron, mathematician and the first programmer. More information can be shown with a link to the Wikipedia article (<https://en.wikipedia.org/wiki/Ada_Lovelace>)   The second piece takes us to 1959 with Grace Hopper, the mathematician who -among other things- created the Cobol programming language and who was also a US Navy Admiral. More information can be shown with a link to Wikipedia <https://en.wikipedia.org/wiki/Grace_Hopper>  The third piece can link to Margaret Hamilton. She is the person responsible for programming the Apollo space shuttle computer that took the first man to the Moon. The third piece can be linked to a Wikipedia article <https://en.wikipedia.org/wiki/Margaret_Hamilton_(software_engineer)>  The fourth piece links to Roberta Williams, a young computer game creator that invented the animated adventure games. Wikipedia article can be found on <https://en.wikipedia.org/wiki/Roberta_Williams>  For the fifth puzzle, Susan Kare will appear. She was responsible for designing the icons for the first Apple Macintosh computer. Her Wikipedia article is https://en.wikipedia.org/wiki/Susan\_Kare   1. A final scene where the timeline is restored and a quiz with questions and extra activities are presented:   Question 1: Which famous person was both a computer programmer and a US Admiral?  - Susan Kare  - Roberta Williams  - Grace Hopper (Correct Answer)  Question 2: Which famous person was the daughter of a famous poet?  - Susan Kare  - Ada Lovelace (Correct Answer)  - Roberta Williams  Question 3: Who designed the first computer animated adventure game?   * Roberta Williams (Correct) * Susan Kare * Margaret Hamilton   Question 4: She was responsible for sending the first man to the moon.  - Susan Kare  - Roberta Williams  - Margaret Hamilton (Correct Answer)  Question 5: She designed the icons for the first commercial computer to use a mouse   * Grace Hopper * Susan Kare (Correct) * Ada Lovelace |
| Type of work: Individual/ collaboration | Students play the game in groups of three |
| Does the game involve different player roles? If yes, specify. | No |

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| PART 4: Description of the learning scenario activities | | |
|  | **Learning settings** | **Estimated time** |
| Before the game: | Students are presented with a brief history of computers, and a brief quiz that evaluates their knowledge on the topic. | 20’ |
| During the game: | Students are shown an introduction to the game and are requested to follow the hints offered by screen instructions in order to find the next clue. With each clue, however, it is important for the students to work with the information given using game-like activities (ie anagrams of the names of the persons or devices mentioned, a short animation, a quiz etc).  Students assemble the timeline by following the correct instructions by the program. First, a short animation is shown to introduce them to the game (please see previous section). Then, a hint is given for the next part of the timeline. The ‘Scenes’ section describes the content of each timeline piece.  During the timeline assembly, students interact with tasks that engage them in physical activities (ie use Napier bones to make calculations, assemble the Pascaline with LEGO parts). For students with disabilities, physical objects can be substituted with virtual.  The final timeline is assembled and students have to take a small quiz on their new found knowledge | 80’ |
| After the game: | Students can assume roles of significant women (and men) they met during their time travel to assemble the timeline. They have to explain why they chose the specific person and what was her or his contribution to science. | 20’ |
|  | **Total**: | 80’ |

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| PART 5: Prerequisite knowledge and supportive material | |
| Learners’ prerequisite knowledge: | Basic understanding on using a mobile device. |
| Infrastructure/ equipment needed for implementing the scenario: | Tablet devices with 4G capabilities. |
| Other learning resources needed: | LEGO technic bricks (If possible) |

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| PART 6: Approach towards the assessment of the learning outcomes | |
| Learners’ assessment approach: | * Quizzes * Presentation by students (as part of their role playing activity) |