Safe Deposit Box mystery (v1):

MaFEA – Making Future Education Accessible
PR3 - EDUCATIONAL LEARNING PATHS

Technology tools (version):	Lego Spike (29)
Requirements: What do you need? (Think hardware, skills, knowledge.)	○ Computers or tablets ○ Stable internet connection ○ Basic robotics and programming knowledge
Optional technologies:	○ A programme for the preparation of the questions for the safe key (Google Forms, Microsoft Forms or something similar)
Date:	15.01.2024
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Topics of the lesson(s):	robotics
Estimated time:	<90 x 90 minutes>

Lesson title/subject: <Safe Deposit Box mystery>

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Intention: What do you wish for or hope to happen? (Intentions are often not measurable or tangible, but help you in developing the design process.)

1. The aim of this lesson is to encourage collaborative learning, critical thinking, and creativity among students by integrating STEM (Science, Technology, Engineering, and Mathematics) principles with other general subjects, such as History, Biology, and Mathematics.
2. The lesson is designed to be engaging and fun, and students will have the opportunity to apply their knowledge in a practical task, which will enhance their problem-solving skills and encourage teamwork..

Desired Outcomes: One or more measurable and tangible goals the teacher aims for with this lesson/these lessons.

1. Students will successfully build and program a LEGO Spike Safe.
2. Students will create and answer questions based on various general subjects, integrating different areas of knowledge.
3. Each group will effectively collaborate to complete the project.
4. Students will develop solutions to open another group's safe, applying reasoning and problem-solving skills.

Agenda: HOW are you going to reach the goals? Description of the lesson plan / educational activities / working methods.

1. Students are divided into small groups.
2. Within each group, roles are assigned (e.g., builders, programmers, question developers) to ensure participation in all aspects of the project.
3. Each group receives a LEGO Spike Safe kit and instructions.
4. Students collaborate to build the safe, applying engineering and problem-solving skills.
5. Introduction to basic programming concepts using the LEGO Spike software.
6. Groups program their safes to open when specific conditions (correct answers to their questions) are met.
7. Groups develop a set of questions based on various general subjects (Mathematics, History, Biology, etc.).
8. Groups rotate to attempt opening other teams' safes using the questions provided.

   The lesson is structured to cater to various learning styles – visual (building, programming), auditory (group discussions), and kinesthetic (hands-on construction).

Roles: Who facilitates what? Who participates? What do we expect of the students?

1. The teacher guides students, presents the task, and provides feedback.
2. Pupils actively participate by working in groups to solve problems and present and discuss their solutions.

Rules: Rules or principles are about how you want to learn and work together.

1. Effective teamwork requires cooperation and communication.
2. Each team member must contribute to finding a solution.
3. Encourage creative thinking and problem-solving while respecting each other's ideas.

Time: Describe the time path: What time do we start / finish / break? When is the time for reflection? What happens between contact times?

1. **Introduction to the Project (15 minutes)**

   Overview of the day's activities.

   Dividing students into groups.

2. **Building the Safe (45 minutes)**

   Groups work on constructing their LEGO Spike Safe.

   Teachers assist and provide guidance.

3. **Programming the Safe (45 minutes)**

   Introduction to basic programming concepts.

   Groups program their safes to open upon correct answers to their questions.

4. **Creating Questions (30 minutes)**

   Groups create questions based on general subjects.

   Questions are designed to be the "keys" to unlock the safe.

5. **Attempt to Open Other Groups' Safes (45 minutes)**

   Groups rotate to attempt opening other safes using the questions provided.

6. **Reflection and Discussion (15 minutes)**

   Groups share their experiences.

   Discuss the challenges faced and how they were overcome.