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| ACTIVITY PLAN | | | | |
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| **Theme** | **Subtopic** | **Activity Title** |
| STEAM Integration in Environmental Education | Technology for Environmental Solutions | Applying Technology for Environmental Innovation |

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| Introduction part (or activity overview) |
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| **Introduction part (or activity overview)** | This activity focuses on leveraging technology to develop innovative solutions to environmental problems. Students will explore various technological tools and applications, work collaboratively to design a tech-driven environmental solution, and present their findings. |
| **SETTING** | Location: Classroom and computer lab for research and development.  Educational Context: Collaborative group work (4-5 students per group). |

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| Materials Needed |
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| **Materials Needed** | Computers with internet access and relevant software (e.g., environmental modeling tools, GIS)  Digital cameras or smartphones  Access to online research databases  Projector for presentations  Materials for creating digital models or prototypes (optional) |

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| **Learning Outcomes** | * Understand the role of technology in solving environmental problems. * Develop practical skills in using technological tools for environmental analysis and innovation. * Enhance abilities in research, project development, and presentation. |  |
| **Activity Contents** | **Theoretical Part (Duration: 45 minutes)**: Begin with an introduction to the significance of technology in addressing environmental issues. Highlight various technologies that can be applied to environmental conservation and sustainability.   * **Introduction to Environmental Technologies**:   + Discuss technologies such as Geographic Information Systems (GIS), remote sensing, environmental modeling software, and renewable energy technologies.   + Explore case studies where technology has successfully addressed environmental challenges. * **Video Resources**:   + "Environmental Protection Technology" https://www.youtube.com/watch?v=dJoIp5P\_yo8 – A video showcasing different technologies used in environmental protection and conservation.   + "EU Environmental Technology Verification for green innovations explained " https://www.youtube.com/watch?v=JiNDM5jOJI8 – An overview of cutting-edge technologies in environmental science and their applications.   **Task 1: Research and Brainstorming Session (Duration: 45 minutes)** **Objective**: To identify environmental problems that can be addressed using technology and brainstorm potential solutions.   * **Step 1**: Form groups and assign each group a broad environmental issue to focus on (e.g., air pollution, water quality, waste management). * **Step 2**: Conduct online research to identify specific problems within the assigned issue that can be addressed using technology. * **Step 3**: Brainstorm potential technological solutions, considering feasibility, innovation, and sustainability. * **Step 4**: Each group selects one solution to develop further.   **Task 2: Project Development and Design (Duration: 90 minutes)** **Objective**: To develop a detailed project plan for the selected technological solution.   * **Step 1**: Develop a detailed project plan that includes:   + Problem definition and objective   + Technological approach and tools required   + Implementation steps and timeline   + Expected outcomes and sustainability considerations * **Step 2**: Create a digital model or prototype of the proposed solution using relevant software or tools (optional but encouraged). * **Step 3**: Prepare a presentation summarizing the project plan, technological approach, and expected impact.   **Task 3: Presentation and Feedback (Duration: 45 minutes)** **Objective**: To present the project to the class and receive feedback.   * **Step 1**: Each group presents their project plan and digital model or prototype to the class. * **Step 2**: Conduct a Q&A session where other students and the instructor can provide feedback and ask challenging questions. * **Step 3**: Groups reflect on the feedback received and discuss potential improvements. |  |
| **Assessments** | Innovation and creativity in solution development.  Quality and feasibility of the project plan.  Effectiveness in using technology for environmental solutions.  Clarity and persuasiveness of the presentation.  Team collaboration and dynamics. |  |
| **Key Competences** | Research and analytical skills  Technological proficiency in environmental applications  Strategic planning and project management  Effective communication and presentation skills  Teamwork and collaboration |  |
| **Connections with Eco STEAM** | Eco: Understanding and addressing environmental issues through technological solutions.  Science: Applying scientific principles to analyze and solve environmental problems.  Technology: Utilizing digital tools and software for environmental research and innovation.  Engineering: Designing practical solutions and prototypes to address environmental challenges.  Arts: Creating engaging presentations and visualizations to communicate findings.  Math: Using data analysis and modeling to support technological solutions. |  |
| **References** | www.environmentalinnovation.org |  |
| **Notes** | This activity can be extended into a longer-term project, where students continuously develop and refine their technological solutions based on ongoing research and feedback. |  |

**Evaluation Criteria Table for Applying Technology for Environmental Innovation Activity**

| **Evaluation Criteria** | **Points Available** | **Comments** |
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| **1. Innovation and Creativity in Solution Development** | 20 | Assess the originality and creativity of the proposed technological solution to the environmental issue. |
| **2. Quality and Feasibility of the Project Plan** | 20 | Evaluate the thoroughness and feasibility of the project plan, including objectives, methods, and expected outcomes. |
| **3. Technological Proficiency** | 20 | Rate the effectiveness and proficiency in using technology to develop the solution. |
| **4. Clarity and Persuasiveness of Presentation** | 20 | Rate the clarity, persuasiveness, and professionalism of the presentation. |
| **5. Team Collaboration and Dynamics** | 20 | Assess the level of teamwork, including communication, cooperation, and mutual support among team members. |

**Total Points:** 100