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| ACTIVITY PLAN | | | | |
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| **Theme** | **Subtopic** | **Activity Title** |
| Collaboration and Communication in EcoSTEAM Projects | Integration of Technical Skills and Environmental Awareness | Bridging Technology and Environmental Stewardship |

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| Introduction part (or activity overview) |
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| **Introduction part (or activity overview)** | This activity aims to integrate technical skills with environmental awareness, enabling students to develop and implement technologically-driven solutions to environmental challenges. Through practical exercises, students will learn to apply technical knowledge to promote sustainability and environmental conservation. |
| **SETTING** | Location: Classroom, computer lab, and potentially an outdoor environment for hands-on projects.  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., GIS, environmental modeling tools)  Sensors and data collection devices (e.g., air quality monitors, water testing kits)  Projector for presentations  Materials for building prototypes or models (optional) |

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| **Learning Outcomes** | * Understand the importance of integrating technical skills with environmental awareness. * Develop practical skills in using technology to monitor and address environmental issues. * Enhance abilities in project planning, execution, and communication. |  |
| **Activity Contents** | **Theoretical Part (Duration: 50 minutes)**: Begin with a detailed discussion on how technical skills can be leveraged to enhance environmental stewardship. Highlight various technologies that have been successfully used to address environmental challenges.   * **Introduction to Environmental Technologies**:   + Discuss technologies such as Geographic Information Systems (GIS), Internet of Things (IoT) for environmental monitoring, renewable energy systems, and environmental modeling software.   + Explore case studies where technology has played a pivotal role in solving environmental problems. * **Video Resources**:   + "Tech for Good: Environmental Monitoring with IoT" [Watch Here](https://www.youtube.com/watch?v=exampleLink1) – A video showcasing how IoT devices are used to monitor and mitigate environmental issues.   + "GIS in Environmental Management" [Watch Here](https://www.youtube.com/watch?v=exampleLink2) – An introduction to the use of GIS technology in tracking and managing environmental resources.   **Task 1: Environmental Monitoring Project (Duration: 90 minutes)** **Objective**: To apply technical skills in monitoring a local environmental parameter (e.g., air quality, water quality, soil health).   * **Step 1**: Select an environmental parameter to monitor based on local relevance and available resources. * **Step 2**: Use sensors and data collection devices to gather real-time data over a set period. * **Step 3**: Analyze the collected data using relevant software tools to identify patterns, anomalies, and potential areas of concern. * **Step 4**: Create a report detailing the findings and suggesting possible interventions based on the data.   **Task 2: Developing a Tech-Driven Environmental Solution (Duration: 90 minutes)** **Objective**: To design and propose a technologically-driven solution to an identified environmental issue.   * **Step 1**: Based on the findings from Task 1, identify a specific environmental challenge that can be addressed using technology. * **Step 2**: 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 3**: Build a prototype or create a digital model of the proposed solution (if applicable). * **Step 4**: Prepare a presentation to pitch the solution, highlighting the integration of technical skills and environmental benefits.   **Task 3: Reflection and Peer Review (Duration: 30 minutes)** **Objective**: To reflect on the integration of technical skills and environmental awareness and receive feedback.   * **Step 1**: Each team presents their project to the class, followed by a Q&A session. * **Step 2**: Conduct a peer review where students evaluate each other’s projects based on set criteria. * **Step 3**: Facilitate a discussion on the importance of combining technical expertise with environmental stewardship and how these projects can be scaled or improved. |  |
| **Assessments** | Technical accuracy and innovation in monitoring and solution development.  Integration of environmental awareness with technical skills.  Clarity and thoroughness of the project plan and presentation.  Team collaboration and dynamics. |  |
| **Key Competences** | Technical proficiency in environmental monitoring and modeling  Strategic planning and project management  Effective communication and presentation skills  Environmental awareness and sustainability thinking |  |
| **Connections with Eco STEAM** | Eco: Understanding the ecological impacts of building practices.  Science: Understanding environmental processes and parameters.  Technology: Utilizing digital tools and sensors for data collection and analysis.  Engineering: Designing practical solutions and prototypes to address environmental challenges.  Arts: Creating engaging presentations and visualizations to communicate findings.  Math: Analyzing data to draw meaningful conclusions and support decision-making. |  |
| **References** | - |  |
| **Notes** | This activity can be expanded into a longer-term project, where students continuously monitor environmental parameters and iteratively develop their solutions based on ongoing data analysis. |  |

**Evaluation Criteria Table for Bridging Technology and Environmental Stewardship Activity**

| **Evaluation Criteria** | **Points Available** | **Comments** |
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| **1. Technical Accuracy and Innovation in Monitoring** | 15 | Assess the precision and creativity in using technology to monitor environmental parameters. |
| **2. Integration of Environmental Awareness** | 15 | Evaluate how well environmental principles are integrated with technical solutions. |
| **3. Feasibility and Practicality of the Solution** | 15 | Judge the practicality and implementability of the proposed technological solution. |
| **4. Quality and Completeness of Project Plan** | 15 | Evaluate the thoroughness and clarity of the project plan, including objectives, methods, and expected outcomes. |
| **5. Data Analysis and Interpretation** | 10 | Rate the effectiveness and accuracy of data analysis and interpretation. |
| **6. Communication and Presentation Skills** | 10 | Rate the clarity, persuasiveness, and professionalism of the presentation. |
| **7. Team Collaboration and Dynamics** | 10 | Assess the level of teamwork, including communication, cooperation, and mutual support among team members. |
| **8. Reflection and Peer Review Engagement** | 10 | Rate the students' engagement in reflecting on their performance and providing constructive feedback. |

**Total Points:** 100