|  |  |
| --- | --- |
|  | Preparation: *Summary of “to do’s” that the teacher should understand and prepare before bringing this lesson to the classroom.* |
| Teachers will need to ensure that the proper supplies are available for students to build their solutions. From the kit you will need these items:**Materials:*** Automated Greenhouse kit from STEM 101

**Tools:*** Located in the kit

  |
|  | Safety: *Summary of safety strategies in the lesson.* |
| Proper tool usage is important. Working with electronics needs to be done carefully to avoid injury or damage to components. Follow instructions carefully. |
|  | Desired Results:  |
| Established Goals: |  | Transfer: |
| *Problem Solving Techniques and Applications Standards:*  | *Students will be able to independently use their learning to…** Understand greenhouses and the agricultural growing process
 |
| Meaning: |
| Understandings*Students will understand that...** Greenhouses allow controllable plant growth
* Automating a greenhouse helps with controlled plant growth
* Microcontrollers can automate many things
 | Essential Questions*Students will keep considering...** Uses for automated greenhouses
* Agricultural growing processes
* Uses for microcontrollers in the environment and agriculture
 |
| Acquisition OF KNOWLEDGE AND SKILL: |
| *Students will know...** Purpose of greenhouses
* Different growing processes
* Automation
* Programming and code
 | *Students will be skilled at...** Coding
* Assembly of greenhouse
* Wiring of Electronics
* Automation
 |
|  | Evidence:  |
| Evaluative Criteria: |  | Assessment Evidence: |
|  | *Performance Task(s):* **Task Placeholder**Students will be assessed on the assembly and function of their greenhouse  |
| *Other Evidence:* * Online test at the end of the unit
 |
|  | Learning Plan: *Summary of Key Learning Events and Instruction* |
| **1. The content knowledge and project instructions will take you through the understanding of Greenhouses along with guiding you through the assembly and functionality of the Automated Greenhouse****Progress Monitoring:**Teacher should observe students and provide on-going feedback during the activity. While introducing the unit, the teacher will pause and ask for questions to make sure everyone understands.Students will complete self-assessment and brainstorm how they could improve their skills in the future. At the end of the unit, there will be a quiz to measure their overall understanding. |
|  | Differentiation: *Summary of Key Differentiation Techniques* |
| The ASCD Study Guide for Integrating Differentiated Instruction and Understating by Design: Connecting Content and Kids.by Carol Ann Tomlinson, Jay McTigheIntegrating Differentiated Instruction and Understating by Design: Connecting Content and Kids.by Carol Ann Tomlinson, Jay McTigheISBN-13: 978-1416602842 ISBN-10: 1416602844Differentiating Reading Instruction*by Laura Robb.*ISBN13: 9780545022989A Teacher's Guide to Differentiating InstructionThe Center for Comprehensive School Reform and Improvement |

|  |  |
| --- | --- |
|  | career Connections: *Summary of Career Opportunities Associated with this Lesson* |
| Good sources for career connections:Occupational Outlook Handbook<http://www.bls.gov/ooh>The National Career Clusters® Framework<http://www.careertech.org/career-clusters> |
|  | Keywords: *Please Insert Keywords from this Lesson with their Definitions* |
| Use resources like [dictionary.com](http://dictionary.reference.com/) to find definitions to your keywords |