

Mount Laurel Township Schools
STEAM Curriculum Guide
Grade Eight

| Unit #1 | | |
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| Stage 1 – Desired Results | | |
| NJCCCS: 2.2 | Unit/Big Idea: STEAM | |
| <p>Enduring Understandings: Students will understand that... Digital tools play an essential role in helping to solve local and global problems.</p> <p>The way people interact with their environment creates changes that can have lasting effects.</p> | <p>Essential Questions: How can digital tools be used to bring the people together to solve local/global issues?</p> <p>How do people affect the environment?</p> | |
| Students will know... | | Students will be able to... |
| Understand and use technology systems. | 8.1.8.A.1 | Demonstrate knowledge of a real world problem using digital tools. |
| Select and use applications effectively and productively. | 8.1.8.A.3 | Use and/or develop a simulation that provides an environment to solve a real world problem or theory. |
| <p>Apply existing knowledge to generate new ideas, products, or processes.</p> <p>Create original works as a means of personal or group expression.</p> | 8.1.8.B.1 | Synthesize and publish information about a local or global issue or event (ex. telecollaborative project, blog, school web). |
| <p>Interact, collaborate, and publish with peers, experts, or others by employing a variety of digital environments and media.</p> <p>Communicate information and ideas to multiple audiences using a variety of media and formats.</p> <p>Develop cultural understanding and global awareness by engaging with learners of other cultures.</p> <p>Contribute to project teams to produce original works or solve problems.</p> | 8.1.8.C.1 | Collaborate to develop and publish work that provides perspectives on a global problem for discussions with learners from other countries. |

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| <p>Plan strategies to guide inquiry.</p> <p>Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.</p> <p>Evaluate and select information sources and digital tools based on the appropriateness for specific tasks.</p> <p>Process data and report results.</p> | 8.1.8.E.1 | Effectively use a variety of search tools and filters in professional public databases to find information to solve a real world problem. |
| <p>Identify and define authentic problems and significant questions for investigation.</p> <p>Plan and manage activities to develop a solution or complete a project.</p> <p>Collect and analyze data to identify solutions and/or make informed decisions.</p> <p>Use multiple processes and diverse perspectives to explore alternative solutions.</p> | 8.1.8.F.1 | Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision. |
| <p>The effects of technology on the environment.</p> | 8.2.8.B.4 | Research examples of how humans can devise technologies to reduce the negative consequences of other technologies and present your findings. |
| <p>The role of society in the development and use of technology.</p> | 8.2.8.B.5 | Identify new technologies resulting from the demands, values, and interests of individuals, businesses, industries and societies. |
| | 8.2.8.B.6 | Compare and contrast the different types of intellectual property including copyrights, patents and trademarks. |
| <p>The influence of technology on history.</p> | 8.2.8.B.7 | Analyze the historical impact of waste and demonstrate how a product is upcycled, reused or remanufactured into a new product. |

Stage 2 – Assessment Evidence

Required Performance Assessment:

You are an environmental engineer. Your role is to research information concerning a local/global problem. You will create a documentary video that proposes solutions to a local/global problem. You will share those videos with students in other local/global communities in order to come up with an effective solution to the problem.

Other Evidence:

Video Production Skills Evidence
Collaborative Digital Tool Skills Evidence
Problem Solving Evidence
Environmental Research Evidence

Stage 3 - Learning Plan

Suggested Learning Activities:

- Steam Introduction (group presentation)
- TV Production Module
 - Tools of the Trade
 - Video (small group instruction)
 - Sound (small group instruction)
 - Lighting (small group instruction)
 - Talent – On Screen/Off Screen (small group instruction)
 - Show Preparation (large & small group instruction)
- Humans & the Environment Module
 - Environmental Science Background (group presentation)
 - Addressing the Issues (small group problem-solving activities)
- Creativity and the Brain
 - Creativity and the Brain Background (group presentation)
 - Creativity Exercises (small group problem-solving activities)
- Creating/Sharing Solutions
 - Researching the Issues (small group work)
 - Preparing Findings (small group work)
 - Presenting Solutions (small group presentation)

Unit Strategies/Modifications:

Special Education Students:

Students will receive one on one instruction on equipment

Whole class practice run through on equipment

Oral presentation/written/visual

Hands-on as well as written

Development of target vocabulary

Scaffolding comprehension and content-area reading

Decreasing the amount of work presented or required

Using videos, illustrations, pictures, and drawings to explain or clarify graphic organizers

Teaching key aspects of a topic. Eliminating nonessential information

Providing study guides

Allowing students to correct errors (looking for understanding)

Marking students' correct and acceptable work, not the mistakes

Allowing products (projects, timelines, demonstrations, models, drawings, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning

Modifying tests to reflect selected objectives

Using true/false, matching, or fill in the blank tests in lieu of essay tests

Reducing the number of answer choices on a multiple choice test

Allowing the use of note cards or open-book during testing

Utilizing graphic organizers
Providing visuals
Strategic grouping

Gifted Students:

Extended requirements
Self-selected tasks for performance assessment
Individual performance assessment

Guided Reading Groups
Literature Circles
Flexible grouping in content areas
Independent projects
Differentiated product assignments
Student Choice
Multiple texts
Multiple intelligence options
Group investigation
Research
Bloom's Taxonomy - Stress higher order thinking skills
Habits of Mind
Webb's Depth of Knowledge – Emphasis on Level 3 and 4

Students at Risk of Failure:

One on one counseling with students
Frequent personal check in with students
Employ spontaneous motivational strategies
Modify requirements
Adjust time for completion of assignments
Allow frequent breaks
Preferential seating
Reduce/minimize distractions
Emphasize teaching (auditory, visual, auditory, tactile)
Individual/small group instruction
Emphasize critical information/key concepts
Pre-teach vocabulary
Provide visual cues
Adjust length of assignment
Break assignments into smaller units
Read directions to student
Positive reinforcement
Frequent checks for understanding
Adapt assessments

English Language Learners:

Digital Language interpretation
Modify requirements
Flexible delivery of information
Flexible deadlines

One on one assistance

Frequent check ins

WIDA Can-Do Descriptors http://www.wida.us/standards/CAN_DOs/

Development of target vocabulary

Scaffolding comprehension, content-area reading

Decreasing the amount of work presented or required;

Using videos, illustrations, pictures, and drawings to explain or clarify.

Graphic organizers

Teaching key aspects of a topic.

Eliminating nonessential information.

Allowing students to correct errors (looking for understanding);

Marking students' correct and acceptable work, not the mistakes;

Showing products (projects, timelines, demonstrations, models, drawings, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning;

Modifying tests to reflect selected objectives;

Using true/false, matching, or fill in the blank tests in lieu of essay tests;

Reducing the number of answer choices on a multiple choice test;

Allowing the use of note cards or open-book during testing;

Collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student.

CRP4. Communicate clearly and effectively and with reason.

CRP5. Consider the environmental, social and economic impacts of decisions.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.