Objective 1: Environmental and Sustainability Education

Guide to Objective 1, Sustainability Literacy and Learning

Sample answers have been provided in red text and may serve as examples of lessons, assessments, activities, programs, and facilities which would align to the Sustainable Schools Goals. The examples do not represent only one programmatic level but serve instead to assist school staff on all levels as they complete the required documents. If you have questions regarding parts of this document, please contact Science Coordinator, Robin Anglin, ranglin@access.k12.wv.us.

Student achievement goal: 100% of the school’s students are environmentally and sustainability literate. Objective 1 includes three main elements.

A. Interdisciplinary learning about the key relationships between dynamic environmental, energy, and human systems;
B. Authentic use of the environment and sustainability to develop Science, Technology, Engineering, Arts, and Math (STEAM) content knowledge and thinking skills to prepare graduates for the 21st century technology-driven economy; and
C. Development of civic engagement knowledge and skills and increase the application of these as students address sustainability and environmental issues in their communities.

Each question in this section is designed to measure your school’s progress toward Objective 1.

Element 1A: Interdisciplinary learning about the key relationships between dynamic environmental, energy and human systems.

1A1. Which practices does your school employ to support environmental and sustainability literacy? (Please check all that apply)

[ ] Our school has an environmental or sustainability literacy graduation requirement. If checked, please describe your school’s environmental or sustainability literacy graduation requirement. (Maximum 200 words)

WV does not have a separate environmental or sustainability literacy or graduation requirement other than those embedded within other science or social studies curricula.
[X] Environmental and sustainability concepts are integrated throughout the curriculum. If checked, please describe how the Environmental and Sustainability Standards and concepts are taught and which subjects they are integrated into. (Maximum 200 words per cell)

<table>
<thead>
<tr>
<th>Grade and/or Subject and objective</th>
<th>Method/s of Implementation in the Classroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>6th grade science, SC.O.6.2.05</td>
<td>Students observed biotic and abiotic factors on the school grounds, at local parks, and in the downtown and rural areas. Teams of students created bulletin boards to graphically represent the interdependence of the factors.</td>
</tr>
<tr>
<td>7th grade science, SC.O.7.2.12</td>
<td>Students examined fish from local rivers and researched abnormalities related to chemical pollutants.</td>
</tr>
<tr>
<td>8th grade science, CS.O.8.2.10</td>
<td>Students made and recorded observations in a variety of locations in the community. They used Prezi® to create and explain the flow chart of the energy flow within the ecosystem they selected.</td>
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</table>

[X] Environmental and sustainability concepts are integrated into classroom based and schoolwide assessments. (Maximum 200 words per cell)

<table>
<thead>
<tr>
<th>Grade and/or Subject and objective</th>
<th>Method/s of Assessment (Maximum 300 words per cell)</th>
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<tbody>
<tr>
<td>4th grade science, SC.0.4.2.08</td>
<td>Student teams created and used model food chains to explain the interdependency of organisms within a food web. Models were examined for accuracy; students orally answered questions when prompted.</td>
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</tbody>
</table>

[X] Our school has a student green team or other student group responsible for leading the school's conservation efforts that is supported or advised by school staff. (Maximum 300 words per cell)

<table>
<thead>
<tr>
<th>Name of the Teams, grade levels of students on the teams, number of students on the teams</th>
<th>Activities managed or completed by the team.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compton’s Composters, 8th grade, 30 students</td>
<td>Students planned and organized school staff and fellow students so composting is done at the school. 8th grade students responsibly take turns to remove kitchen waste, monitor and tend to the compost pile as</td>
</tr>
</tbody>
</table>
Environmental Class, 10, 11, 12 grade students, 28 students

needed, and distribute composted materials on the school grounds.

Students contacted the DNR and local land owners to organize the planting of trees in buffer zones to reduce soil erosion and the amount of chemicals entering the watershed.

RESOURCES: State Education & Environment Roundtable, Excellence in Environmental Education: Guidelines for Learning (K-12)

1A2. Professional development opportunities in environmental and sustainability education are provided for all teachers through the WVDE, WV DNR, The Mountain Institute, NASA IV& V, the WV Science Teacher Association, the WV Environmental Education Association, and many others. Please describe professional development opportunities addressing environmental and sustainability standards in which your teachers have participated. Include the percentage of teachers who participated in these opportunities over the past 2 years. (Maximum 300 words per cell)

<table>
<thead>
<tr>
<th>Percentage of teachers who participated, teachers’ names, grades and/or subjects they teach</th>
<th>Name and date of the professional development, and the organization or facilitators who provided the professional development. Include, how was the professional development was implemented it classroom?</th>
</tr>
</thead>
<tbody>
<tr>
<td>5% of the teachers participated, Ms. Sally Mander, 9th grade physical science</td>
<td>NEED, National Energy Conference in Denver, July 10-14, 2011. Students built circuits which included LED and incandescent lights. They measured the energy usage of both systems.</td>
</tr>
</tbody>
</table>

1A3. Which of the following features does your school have to connect students to ecologically or socially/culturally beneficial uses including those that give consideration to native wildlife or community connections? (check all that apply)

[ ] Athletic area

[ ] Environmental restoration projects (on campus or nearby)
[ ] Outdoor classroom
[ ] Outdoor spaces designed and used regularly for social interaction
[ ] Playgrounds
[ ] Rain garden
[ ] Recreational areas
[ ] School vegetable garden
[ ] Walking or running trails
[ ] Wildlife or native plant habitats
[ ] Other (describe below, maximum 300 words)

A school weather station is used to collect data which is correlated to local phenology data and posted online.

RESOURCES: Fish and Wildlife Service Schoolyard Habitats

1A4. Does your school serve grades 9 - 12?

( ) Yes

( ) No

*If yes, please provide the following information.*

_____ Percentage of students taking an Environmental Science elective, course code 6312

_____ Percentage of students of eligible graduates completed the AP Environmental Science course

_____ Percentage of these students who scored a 3 or higher on the AP Environmental Science exam
Element 1B: Use of the environment and sustainability to develop Science, Technology, Engineering, Arts, and Math (STEAM) content knowledge and thinking skills to prepare graduates for the 21st century technology-driven economy.

1B1. Does your school curriculum make connections between classroom and college and career readiness, in particular post-secondary options in environmental and sustainability fields (for example, CTE Green Sustainable Design and Technology course)?

(X) Yes
( ) No

If yes, please describe these college and career connections. (Maximum 200 words)

Authentic personnel from the DNR and EPA visited the school and explained the preparations they needed for their career choices and what they do. Students were given opportunities to attend weekend field trips with the teacher and the DNR and EPA personnel. Students made observations, took photos, and collected collection.

1B2. Do students have meaningful outdoor learning experiences (experiences that engage students in critical thinking, problem solving and decision making) at every grade level?

( ) Yes
(X) Not at all grade levels
( ) Not at all

If not in all grades, please specify which grades. (Maximum 200 words)

Students in grades 7 and 8 collected and used macro invertebrates and did chemical analyses to determine the water quality of the stream behind the school. They presented the information to the city council and local school board and proposed methods to improve the water quality in the area.

Element 1C: Development of civic engagement knowledge and skills and increase the application of these as students address sustainability and environmental issues in their communities.

1C1. Please share how outdoor learning is used to teach an array of subjects in contexts, engage the broader community, and develop civic skills. (Maximum 200 words)

An outdoor pavilion was constructed in the school yard near a stream behind the school. The pavilion, with its tables and benches, is used as a classroom when student make weather
observations and forecasts, do creative writing about the area, and conduct water quality analyses of the stream.

1C2. Do students conduct an age-appropriate, self-selected, civic/community engagement project at every grade level?

( ) Yes

(X ) Not at all grade levels

( ) Not at all

If not in all grades, please specify which grades. (Maximum 200 words)

The current standards and new Social Studies CSOs address community service at all grade levels.

Third grade students participated in the Journey North program by planting tulips in local parks and documenting when the tulips bloomed.

1C3. Please provide the following information:

_____ What percentage of civic projects focus on environmental or sustainability topics?

_____ What percentage of students completed such a project last year?

Please describe examples of the projects. (Maximum 300 words)

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<thead>
<tr>
<th>Grade and/or Subject and objective</th>
<th>Method/s of Implementation in the Community</th>
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<tbody>
<tr>
<td>Kindergarten SS.O.K.01.05</td>
<td>Students from all grades in the school planted and raised flowers in their classrooms and assisted their parents in planting butterfly gardens on the school grounds and at the City Park, local Senior Citizen Center, Public Library, and City Hall.</td>
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<tr>
<td>1st Grade SS.O.01.01.06</td>
<td></td>
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<tr>
<td>2nd Grade SS.O.02.01.01</td>
<td></td>
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</tbody>
</table>
1C4. Please describe your partnerships with local academic, business, government, nonprofit and informal science institutions to help advance your school, other schools (especially schools with fewer resources) and the greater community toward the 3 Pillars. Include both the scope and impact of these partnerships. Remember to include the many community service activities which are done as classroom projects and those done by the student council, national honor society, and career and technical organizations, etc. (Maximum 300 words)

Students from the Career and Technical Education Center contacted local businesses for donations to repair or replace benches at the local park. Identification makers were made and placed in the park to identify indigenous trees.

National Honor Society students organize and encourage participation in the school recycling program.

This is the end of Objective 1. Please describe other methods and measurements your school uses to ensure matriculating students are environmentally and sustainability literate. (Maximum 200 words)

Students in the Environmental AP class read and discussed Rachel Carson’s *Silent Spring*.

Students in the Conceptual Biology Class used GPS and GIS technology to ground truth and provide data as part of the GLOBE project.

7th grade student wrote articles about environmental topics for the local newspaper.

5th grade students read and critiqued books with environmental topics. They raised money to purchase their favorites for the Children’s Library.