



Elaborate, Lesson #6: "Buckets of Benefits"

These materials are all part of EPA Report #: EPA/600/R-18/231.

Time Consideration

Prep time: 15 minutes, Activity time: 30+ minutes

Materials

Printed handouts, writing utensils

Optional: buckets of hands-on materials (all handouts have images of the items)

- Soap
- Pacifier
- Face mask/filter
- Ear plugs
- Sponge
- Empty medicine bottle
- "Idea" symbol
- Hotel image
- Food image
- Money image



Figure 1. "Buckets of Benefits" items for group activity.

Teacher Preparation

1. Print "**Buckets of Benefits**" handouts.
2. If using actual buckets of materials, assemble all materials into group buckets (Figure 15).

Procedure

1. Deliver background information on **ecosystem services: providing the benefits that humans receive from nature**. Have students provide examples of ecosystem services and related human benefits.

Examples of ecosystem services: trees provide oxygen which we breathe; trees provide shade on the playground (US EPA 2008); wetlands filter water (Vellidis et al., 2003); forests provide places for people to recreate (Kline et al., 2011).

Examples of human benefits: reductions in stress and anxiety from spending time at the beach (MacKerron & Mourato 2013); reduced symptoms of post-traumatic stress disorder after spending a weekend fly-fishing by the river (Vella et al., 2013).

2. Provide all students with either handouts or buckets. Explain that students should fill in **Ecosystems** (e.g., forests, deserts, wetlands, oceans, urban ecosystems, agro-



ecosystems) that they think fit in the far left column. Students should come up with their own ideas for associations using the prompts in the center column. And students should **elaborate** on why they chose their ecosystem and prompt in the far-right column.

Note on ANSWER KEY: There will be **many right answers** in these handouts. **Students will come up with all sorts of ideas and analogies.** An answer key is not provided, but if you want examples, you can find some on epa.gov/enviroatlas – essentially, if the students can **justify** their answers in a way that you think is reasonable, consider those answers as you see fit for student credit.

- 3. Evaluate:** During the group discussions, informally assess student understanding of ecosystem services. Then, have the groups share and **explain** their examples with the whole class. Finally, formally assess student understanding with the collection and reading of the student handouts.



Figure 2. Students evaluate items to create ecosystem services analogies during the "Buckets of Benefits" activity.



Figure 3. Students write justifications for their ecosystem services analogies in the "Buckets of Benefits" activity.

Lesson Plan

www.epa.gov/enviroatlas

Ecosystem Services, "Buckets of Benefits"

Name(s): _____ Date: _____

BACKGROUND: Ecosystem services provide the benefits that humans receive from nature. The following are just a few examples of ecosystem services:

- clean air to breathe
- clean water to drink
- places to play outdoors

These services are important to almost every aspect of human well-being, including our health, safety, and economy.

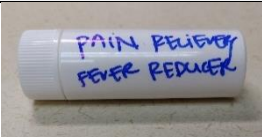








INSTRUCTIONS: Using the provided bucket of materials, make analogies from the items to the ecosystems or the ecosystem services that they provide.

Ecosystem name options: Forests, Deserts, Wetlands, Oceans, Urban Ecosystems, Agro-ecosystems

Ecosystem service options (also hints/ideas!): Clean Air, Clean Water, Natural Hazard Mitigation, Recreation & Physical Activity, Aesthetics & Engagement with Nature, Food, Fuel, and Materials, Biodiversity Conservation, Climate Stabilization

| | | |
|---|--|--|
| WORD BANK: Forests, Deserts, Wetlands, Oceans, Urban Ecosystems, Agro-ecosystems (use each as many times as you want!) | <i>[choose one option below]</i> Could be represented by a... Is/are like a... Have similarities to a... Provide(s)... | Because... <i>[finish sentence about ecosystem services here]</i> |
|---|--|--|

| | | | | |
|----------|-------------------------|--|--|---|
| Examples | Urban Ecosystems | <i>Are like a BALL...</i> |  | <i>Because they provide opportunities for recreation.</i> |
| | Wetlands | <i>Could be represented by a PACIFIER...</i> |  | <i>Because wetlands are like a "nursery" for young aquatic species. (Wetlands provide safe habitat for the young of many fish, crabs, and other small creatures.)</i> |

| Your turn! With your group, fill in boxes 1-14 below. | | |
|--|--|--|
| WORD BANK: Forests, Deserts, Wetlands, Oceans, Urban Ecosystems, Agro-ecosystems (words can be used more than once) | [choose one option below] <ul style="list-style-type: none"> • Could be represented by a... • Is/are like a... • Have similarities to a... • Provide(s)... | Because... [finish sentence about ecosystem services here] |
| 1. | Can provide medicine... |  Because many of the prescription drugs in the U.S. are derived from nature. |
| 2. | Have similarities to SOAP... |  Because plants can help filter and clean the water. |
| 3. | Are like a SPONGE... |  Because 4. _____ _____ can absorb lots of water. |
| 5. | Could be represented by EAR PLUGS... |  6. Because... |
| 7. | 8. |  Because they can filter pollutants out of the air. |
| Oceans | Could be represented by an "IDEA" SYMBOL... |  9. Because... |
| 10. | Have similarities to a HOTEL |  Because many species "stop over" or stay here while migrating. |
| 11. | Can provide FOOD... |  12. Because... |
| Forests | 13. |  14. Because... |

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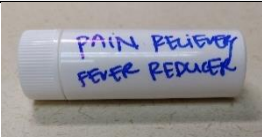





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| | [choose one option below] Could be represented by a... Is/are like a... Have similarities to a... Provide(s)... | | Because... [finish sentence about ecosystem services here] | |
|----------|---|---|--|--|
| Examples | Urban Ecosystems | Are like a BALL ... |  | Because they provide opportunities for recreation. |
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| Your turn! With your group, fill in boxes 1-27 below. | | |
|---|--|--|
| WORD BANK: Forests, Deserts, Wetlands, Oceans, Urban Ecosystems, Agro-ecosystems (words can be used more than once) | [choose one option below] <ul style="list-style-type: none"> • Could be represented by a... • Is/are like a... • Have similarities to a... • Provide(s)... | Because... [finish sentence about ecosystem services here] |
| 1. | 2.  | 3. |
| 4. | 5.  | 6. |
| 7. | 8.  | 9. |
| 10. | 11.  | 12. |
| 13. | 14.  | 15. |
| 16. | 17.  | 18. |
| 19. | 20.  | 21. |
| 22. | 23.  | 24. |
| 25. | 26.  | 27. |