



Title: Food Chain/Energy Transfer

Grade(s): 4th grade

Subject(s): Science

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Overview: Students will explore relationships between producers, consumers, and decomposers, with a focus on the three types of consumers: primary, secondary, and tertiary. After viewing and discussing the differences in animal eating habits, students will create and label a food web. Students will complete a RAFT-differentiated, technology-oriented project, preferably using Scratch software.

Content Standards:

- SC(4) 5.3 Tracing the flow of energy through a food chain.
- ELA(4) 14 Identify strategies of a skillful listener, including attending to the listening task and assigning meaning to the message.
- TC (3-5) 2 Use various technology applications, including word processing and multimedia software.
- TC (3-5) 9 Use technology tools to organize, interpret, and display data.

Local/National Standards: NSES Standard C Develop understanding of organisms and environments.

Primary Learning Objectives: Describe the transfer of energy within a food chain.

Additional Learning Objectives: Using technology, students will demonstrate the transfer of energy within a food chain.

Approximate Duration of Lesson: 3 days; 45 minutes per day

Materials and Equipment: Pictures from magazines of various animals, yarn, and poster board; science literature on food chains

Technology Resources Needed: Computers with Scratch program, Scratch animations (five included in this folder)

Background/Preparation: Students should have a basic understanding of consumers, producers, and decomposers as well as computer knowledge of how to create a Scratch project, or use a word processor or presentation software.

Procedures/Activities:

- Step 1 Engage: Teacher will use a K-W-L chart to solicit students’ prior knowledge of animal eating habits.
- Step 2 Explore: The students will be divided into groups based on a specific habitats, such as ocean, desert, rainforest, polar regions, and grasslands. Student groups will create food chains using yarn and animal icons to show the flow of energy within a habitat.
- Step 3 Explain: Teacher will explain the elements of a food chain using diagrams, videos, texts, and so forth. Afterwards, groups collaborate to amend their food chains from Step 2 so the flow of energy makes sense.

- Step 4 Elaboration: Teacher will present the “Out of Order” Scratch animation. Groups collaborate to identify correct order of 1st, 2nd, and 3rd level consumers, and describe the flow of energy from one level to another. Groups share their findings with the class.
- Step 5 Evaluation: Teacher will show additional Scratch animations as examples for students (Bird-Insect Food Chain; Underwater Food Chain; Lion-Zebra Food Chain).

Student groups will create a food web; each web must include at least 6 organisms, from producer to decomposer. Groups have the following options in creating their food web:

- Role—choice of writer, artist, scientist, or reporter
- Audience—choice of peer group, self, judge, or parents
- Format— Students are strongly encouraged to use Scratch animation; however, students may produce a song lyric, booklet, or poem using word processing or presentation software.
- Topic—How is energy transferred within a food chain/web? Choose from following habitats: grasslands, polar regions, rainforest, ocean, and desert.

Attachments:

- Assessment rubric
- Scratch animations (five animations included in folder)

Assessment Strategies:

Rubric

Extension:

Students may present their creations to the class and may blog feedback if class has edublog.org accounts.

Remediation:

Allow students extra time for on-level science reading. Arrange groups so that peer support is available.

FOOD CHAIN/ENERGY TRANSFER RUBRIC

	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
Participation	No participation in activities.	Some participation, but did not work well with the group.	Participated throughout activities and contributed to a successful outcome.	Worked well with everyone in group, offered ideas, and contributed to successful outcome.	
Scientific Accuracy	Did not complete food chain project.	Food chain has two or more science errors.	Food chain has only one science error.	Food chain is scientifically accurate.	
Language Arts and Technology	More than six combined errors in language or technology.	Four to six combined errors in language or technology.	Two to four errors in language or technology.	Zero to one error in language or technology.	
Food Web	Contains organisms that are unrelated in the food chain.	Contains three or fewer organisms.	Contains four or five organisms, from producer to decomposer.	Contains six or more organisms, from producer to decomposer.	
Total Score (out of 16)					