



NETUKULIMK: ECONOMIC, SOCIAL, AND POLITICAL LIFE

GRADES 4 TO 6: TRADITIONAL KNOWLEDGE

Opening Activity II: Cycles of Life

This activity uses element cards (animals, plants, fish, molluscs, water and soil) and allows students to create a cycle of life with each other. The purpose is to explore the concept of **msit no'kmaq**—we are all related. The lesson would proceed as follows:

- Ensure students understand the following concepts: interdependence, predator, and prey. Other helpful terms include habitat, trophic levels, seasons, and migration.
- Distribute the element cards and review them with students. Ask each student to share who they are with the class.
- Students should then research their element to figure out what they eat and who eats them. This can be done with the teacher using the key on pages 179-182, or on the web as independent work. Useful websites follow at the end of the activity.
- When they are finished with their own element, ask the students to link arm with another element that they are related to or affect. Who do they eat? Who eats them? Who do they live near by? Share food with? Share a habitat with?
- When the students believe they have made all the linkages they can try to identify more linkages. In the end, students should be virtually on top of each other, demonstrating the degree of interdependence of the world. They should be able to see that each cycle is

a part of numerous other cycles, directly and indirectly.

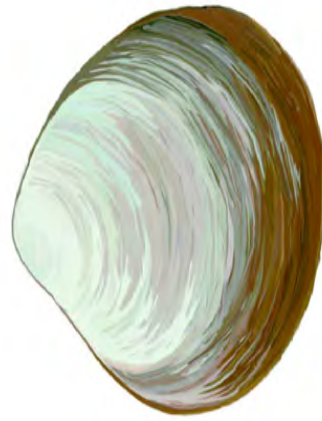
- Then ask them who or what either helps them live, or damages them? What governs the behaviour of each element? Does it matter? Is it different for a person than it is for a coyote than it is for a tree? Who or what decides? Why does this matter?
- Finally, how is this element changed? What happens to it after it dies? Where did it go? Did it become a part of a new life? And new death? And a different new life? Did human life impact it?

When students are finished understanding relationships among the elements, they can draw or otherwise record their cycles of life.

One of the important concepts within Netukulimk is that every element in our world is a part of every other element. This opening activity helps students see that if these cycles are extended over many generations and thousands of years—through various events of death, decomposition, predation and prey—that we really are all part of one another.



PEJU



PUKUNMAWEL



PKWIMANN



KOPŁTEJ



TUPSI



MTE'SKM



KATEW



ATOQWA'SU



SU'N

BLUEBERRIES

IT EATS:

GETS EATEN BY:

OTHER FACTS:

QUAHOG

IT EATS:

GETS EATEN BY:

OTHER FACTS:

COD

IT EATS:

GETS EATEN BY:

OTHER FACTS:

SNAKE

IT EATS:

GETS EATEN BY:

OTHER FACTS:

ALDER

IT EATS:

GETS EATEN BY:

OTHER FACTS:

SOW BUG

IT EATS:

GETS EATEN BY:

OTHER FACTS:

CRANBERRIES

IT EATS:

GETS EATEN BY:

OTHER FACTS:

TROUT

IT EATS:

GETS EATEN BY:

OTHER FACTS:

EEL

IT EATS:

GETS EATEN BY:

OTHER FACTS:



KITPU



MIMIKEJ



KU'KU'KWES



TAQTA'LOQ



JJAWE'J



MUIN



KOPIT



APLI'KMUJ



SQOLJ

OWL

IT EATS:

GETS EATEN BY:

OTHER FACTS:

BUTTERFLY

IT EATS:

GETS EATEN BY:

OTHER FACTS:

EAGLE

IT EATS:

GETS EATEN BY:

OTHER FACTS:

BEAR

IT EATS:

GETS EATEN BY:

OTHER FACTS:

CRICKET

IT EATS:

GETS EATEN BY:

OTHER FACTS:

SALAMANDER

IT EATS:

GETS EATEN BY:

OTHER FACTS:

FROG

IT EATS:

GETS EATEN BY:

OTHER FACTS:

RABBIT

IT EATS:

GETS EATEN BY:

OTHER FACTS:

BEAVER

IT EATS:

GETS EATEN BY:

OTHER FACTS:



JAKEJ



PUTUP



TI'AM



SU'ITE'L



MATUES



MASKWI



PLAWEJUIMANAQSI



PLAMU



WASOQETESINKTEW

MOOSE

IT EATS:

GETS EATEN BY:

OTHER FACTS:

WHALE

IT EATS:

GETS EATEN BY:

OTHER FACTS:

LOBSTER

IT EATS:

GETS EATEN BY:

OTHER FACTS:

BIRCH

IT EATS:

GETS EATEN BY:

OTHER FACTS:

PORCUPINE

IT EATS:

GETS EATEN BY:

OTHER FACTS:

SWEETGRASS

IT EATS:

GETS EATEN BY:

OTHER FACTS:

FIREFLY

IT EATS:

GETS EATEN BY:

OTHER FACTS:

SALMON

IT EATS:

GETS EATEN BY:

OTHER FACTS:

PARTRIDGEBERRIES

IT EATS:

GETS EATEN BY:

OTHER FACTS:



WETI



E'S



SŁPEKN



JIPJAW EJ



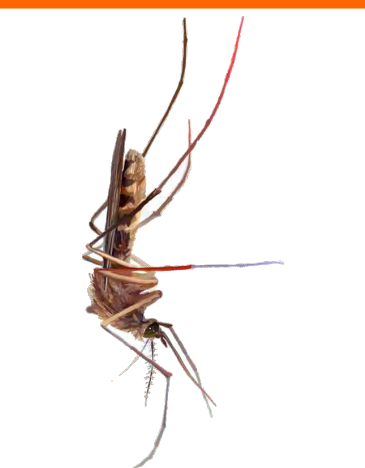
TITIES



PLAW EJ



AMU



KLMUE'J



SAMQWAN

GROUND POTATO

IT EATS:

GETS EATEN BY:

OTHER FACTS:

CLAMS

IT EATS:

GETS EATEN BY:

OTHER FACTS:

WORM

IT EATS:

GETS EATEN BY:

OTHER FACTS:

PARTRIDGE

IT EATS:

GETS EATEN BY:

OTHER FACTS:

BLUE JAY

IT EATS:

GETS EATEN BY:

OTHER FACTS:

ROBIN

IT EATS:

GETS EATEN BY:

OTHER FACTS:

WATER

IT EATS:

GETS EATEN BY:

OTHER FACTS:

MOSQUITO

IT EATS:

GETS EATEN BY:

OTHER FACTS:

BEE

IT EATS:

GETS EATEN BY:

OTHER FACTS:



SAPTKMK



MNTMU



ALANJ



APUKSKN



LPA'TUJ



MIKJIKJ



NA'JIPUKTAQNEJ



KU'KU'KWESJI'J



L'KETU

HERRING

IT EATS:

GETS EATEN BY:

OTHER FACTS:

OYSTER

IT EATS:

GETS EATEN BY:

OTHER FACTS:

DIRT

IT EATS:

GETS EATEN BY:

OTHER FACTS:

TURTLE

IT EATS:

GETS EATEN BY:

OTHER FACTS:

YOUNG BOY

IT EATS:

GETS EATEN BY:

OTHER FACTS:

LYNX

IT EATS:

GETS EATEN BY:

OTHER FACTS:

MUSHROOM

IT EATS:

GETS EATEN BY:

OTHER FACTS:

MOTH

IT EATS:

GETS EATEN BY:

OTHER FACTS:

BAT

IT EATS:

GETS EATEN BY:

OTHER FACTS:



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Key to Elements: *this information is provided to get students started. It is not comprehensive; sources for additional research are included at the end of the key.*

Alanj/herring *Eats:* phytoplankton, baby clams, oysters, lobsters and other crustaceans. *Eaten by:* bear, cod, birds including eagles, osprey and sea gulls, whales, other fish including salmon, and people.

Amu/Bumble bee *Eats:* nectar and pollen. *Eaten by:* birds, bears, insects (including wasps), spiders, toads, skunks, and small mammals. *Other:* bees produce honey for a range of animals including people and bears.

Apli'kmuj/Snowshoe hare *Eats:* plants including green grasses, vetches, strawberry, dandelion, clovers, daisies, birch, willow, aspen, and carrion. *Eaten by:* foxes, coyotes, owls, wolves, lynx, bobcat, people, and mink. *Other:* an important animal in Mi'kmaw stories as well as for food and fur. Historically, the leg bone was used for teething babies.

Apuksikn/lynx *Eats:* Snowshoe hare, rodents, porcupine, red squirrels, deer, large ground birds like partridge or pheasant, sometimes reptiles. *Eaten by:* as pups: foxes and coyotes, and large owls.

Atoqwa'su/Brook trout *Eats:* (anything and everything) aquatic insects, terrestrial insects, small fish (including their own), mayflies, salamanders, worms, crustaceans, spiders, frogs, snakes, small rodents. *Eaten by:* brook and other trout species, heron, eagles, and people. *Other:* called trout, but are actually a char species, and are highly sensitive to water temperature and acidity.

E's/soft shell clam *Eats:* plankton and organic detritus. *Eaten by:* sharks, sculpin, shorebirds, particularly gulls, cormorants, ducks, green crabs, snails, and people.

Jakej/lobster *Eats:* bottom feeder: decayed organic matter on the bottom of the ocean, crab, clams, mussels, starfish, sea urchins and flounder. *Eaten by:* as young: cod, flounder, monkfish, sculpin, and as older:

gulls and people. *Other:* lobster is now an important part of First Nation fisheries.

Jijawe'j/cricket *Eats:* grasses, ragweed, butterflies (eggs), grasshoppers (eggs), other insects and crickets. *Eaten by:* various birds, beetles, frogs, toads, turtles, salamanders, people, and small rodents. *Other:* indicator species for harvesting birchbark in the spring (coming out of hibernation) and for drying skins and meat in the fall (when chirping stops).

Jipjawe'j/American robin *Eats:* wild and cultivated fruits and especially berries, worms, beetles, caterpillars, small snakes, fish, and various other insects. *Eaten by:* owls, hawks, raccoons, snakes, squirrels, crows, and Blue jays. *Other:* one of the characters in the Muin and the Seven Bird Hunters that follows in the core activity for this unit.

Katew/American eel *Eats:* aquatic insects, small crustaceans, clams, worms, fish and frogs, carrion. *Eaten by:* eagles, seabirds (gulls, cormorants, herons), larger fish including sharks, and people. *Other:* eel have been an important food source for the Mi'kmaq and are culturally significant as well. See www.uinr.ca.

Kitpu/Bald eagle *Eats:* cod, eels, flounder, salmon, ducks, and carrion. *Eaten by:* the Bald eagle has no known predators, although human activities have major consequences for them. *Other:* the Bald eagle is one of the most culturally and spiritually significant animals to the Mi'kmaq, a messenger from the people to the Creator.

Klmue'j/mosquito *Eats:* plant nectar. *Eaten by:* bats, birds, spiders, frogs, dragonflies, and fish. *Other:* female mosquitoes require blood for reproduction, and will drink the blood from various mammals, birds, reptiles and amphibians.

Kopit/beaver *Eats:* bark of willow, maple, poplar, beech, birch, alder and aspen trees. *Eaten by:* bears, wolves, lynx, fishers, River otters, and people. *Other:* beavers figure prominently in Mi'kmaw stories and also have been valued as a fur and food source.





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Kopitej/Sow beetle *Eats:* any decaying plant and animal material as well as algae, fungus, moss, and bark. *Eaten by:* spiders, ants, birds, and amphibians. *Other:* the Mi'kmaw name is a derivation of beaver—because it looks like a beaver tail!

Ku'ku'kwes/Barred owl *Eats:* mostly voles and shrews, but also frogs, snakes, slugs, rabbits, salamanders, fish, insects, and earthworms. *Eaten by:* Great Horned owl. *Other:* the Mi'kmaw name “Googoo” is a derivation of “ku'ku'kwes.”

Ku'ku'kwesji'j/Laurel Sphinx moth *Eats:* as a caterpillar, the leaves of laurel, lilac, fringe tree, ash tree, poplar, mountain holly and northern bush honeysuckle. *Eaten by:* spiders and many bird species. *Other:* ku'ku'kwesji'j means little owl in Mi'kmaq—reflecting that some moths look like miniature owls.

L'ketu/mushroom *Eats:* dead organic matter from the soil and water (decomposer). *Eaten by:* deer, bears, slugs, snails, insects, rabbits, crows and other birds, and people, among others. *Other:* mushrooms are more an animal than a plant, but they are distinct from both animals and plants.

Lpa'tuj (Nnu)/young boy (people) *Eats:* Human beings eat a wide variety of foods including mammals, fish, plants, insects, amphibians, and birds. *Eaten by:* coyotes, bears, and cougars. *Other:* while humans are in the middle of the food chain in terms of trophic levels, they have enormous consequences on habitats across the world—terrestrial and aquatic.

Maskwi/White birch *Eats:* water, nutrients from the soil. *Eaten by:* beaver, insects, moose, deer, porcupine, sapsuckers. *Other:* birchbark is lightweight, waterproof and pest resistant; due to these properties it has been used widely by the Mi'kmaq for everything from wigwams, to canoes, to birchbark containers. The inner bark can also be used for an orange dye.

Matues/porcupine *Eats:* diet varies by season, but preference is for bark of young conifers and particularly spruce and fir, but also sugar maple, poplar, birch, hemlock, and ash trees as well as some seeds, nuts and fruits. *Eaten by:* lynx, bobcat, coyotes, fishers, wolves,

Great Horned owls, and people. *Other:* matues have been known to eat wood products such as axe handles, etc., for the salt. Porcupine quills are used extensively by the Mikmaq. The quills are used for quillboxes as well as to adorn a wide variety of household items such as chairs, wall pockets and picture frames.

Mikjikj/Painted turtle *Eats:* crustaceans, insects, snails, small fish, berries, worms, frogs, some plants including leaves and algae. *Eaten by:* raccoons, skunks, otters, mink, people, and foxes. *Other:* turtles are a symbol of knowledge and wisdom because of the knowledge they gain over their very long lives—in fact the longest of any animal in Mi'kma'ki.

Mimikej/butterflies *Eats:* adults feed on nectar with juveniles feeding on a wide variety of leaves of plants. *Eaten by:* birds, dragonflies, snakes, frogs and toads.

Mntmu/oyster *Eats:* phytoplankton and zooplankton. *Eaten by:* comb jellies, crustaceans, starfish, fishers, River otters, people and some fish as young oysters.

Mte'skm/Garter snake *Eats:* worms, salamanders, frogs, small fish, crickets, caterpillars, beetles, spiders, snails, and slugs. *Eaten by:* crows, foxes, raccoons, hawks, and eagles.

Muin/Black bear *Eats:* berries, insects, grasses, deer, moose, grubs, honey, many fish including salmon and trout, snakes, and small mammals. *Eaten by:* Grizzly bears, wolves, lynx, bobcat, coyote, and people. *Other:* a symbol of family and maternal care as young cubs stay with their mothers for 3-5 years after birth; one of the longest periods known for non-human animals.

Na'jipuktaqnej/Little Brown bat *Eats:* small moths, wasps, small beetles, gnats, mosquitoes and other insects. *Eaten by:* rarely preyed upon in the wild, mice during hibernation is possible. *Other:* bats in Mi'kma'ki have been affected dramatically by a fungus called the White Nose Syndrome with a 90% decline between 2011 and 2014 according to the Nova Scotia Department of Natural Resources.



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Peju/cod *Eats:* most small aquatic organisms, but mainly zooplankton, phytoplankton, shrimp, crustaceans including mussels, clams, sand dollars, squid, and other fish including cod. *Eaten by:* seals (harp and harbour), sharks, other fish including other cod, and people.

Pkwimann/blueberry *Eats:* water and nutrients in the soil. *Eaten by:* bears, bees, various birds including partridge, butterflies, deer, insects, robins, foxes, rabbits, and people. *Other:* blueberries were used for dyes, tea and medicines.

Plamu/salmon *Eats:* aquatic insect larvae, terrestrial insects, herring, alewife, smelt, capelin, trout, mackerel and cod. *Eaten by:* seabirds including mergansers, cormorants, and gulls, other fish including cod, pollack, and pike, bears, sharks, seals, otters, and people.

Plawej/partridge *Eats:* insects as young, berries and fruit including partridgeberries, apples, blueberries, and strawberries, sunflower seeds, and birch, poplar and willow buds. *Eaten by:* foxes, bobcat, fishers, weasels, ermine, coyotes, owls, hawks, falcons, and people. *Other:* also called Ruffed grouse.

Plawejjuimanaqsi/partridgeberry *Eats:* water and nutrients in the soil. *Eaten by:* moose, bear, deer, people, skunks, partridge (also called Ruffed grouse), and spruce grouse as well as many other mammals and birds. *Other:* used for medicines (to reduce fevers and swelling and to ease childbirth), and as a tea.

Pukunmawel/quahog *Eats:* plankton. *Eaten by:* starfish, whelks, crabs, snails, shorebirds, some fish and people. *Other:* wampum beads were made from the quahog shell.

Putup/Minke whale *Eats:* plankton, cod, eels, herring, salmon (can eat any small fish). *Eaten by:* people, orca whales, large sharks. *Other:* there has been no commercial whaling since 1986.

Taqta'loq/salamander *Eats:* insects, worms, beetles, snails, spiders and slugs. *Eaten by:* Brook trout, turtles, frogs, beetles and owls.

Samqwan/water All plants and animals need water to survive; understood as the essence of life.

Sapikmik/soil While soil does not eat plants or animals, it does contain nutrients, bacteria, and minerals, among much else that are essential to plants and to some animals.

Sipekn/Wild potato *Eats:* nutrients from the soil and aquatic environment. *Eaten by:* beavers, porcupine, muskrats, ducks, geese, and people. *Other:* sipekn were an important food source for the Mi'kmaq historically and are still harvested today.

Sqolj/Bullfrog *Eats:* worms, insects, crustaceans, young birds, and eggs of fish, frogs, salamanders and snakes. *Eaten by:* herons, egrets, turtles, water snakes, raccoons, kingfishers, and people.

Su'ite'l/sweetgrass *Eats:* water and nutrients from the soil. *Eaten by:* waterfowl. *Other:* sweetgrass is one of the most culturally and spiritually significant plants to the Mi'kmaq; used in ceremonies as well as in baskets, quillboxes and other art forms.

Su'n/cranberry *Eats:* water and nutrients from soil. *Eaten by:* bees, deer, Black bears, rodents including woodchucks and voles, Blue jays, Red-winged blackbirds, woodpeckers, and people. *Other:* used as a dye and as medicine.

Ti'am/moose *Eats:* herbivore: grasses, young trees, lichens, woody plants, water plants. *Eaten by:* wolves, coyotes, bears, and people. *Other:* a culturally important animal to the Mi'kmaq. Today Nova Scotia Mainland moose are endangered. Lots of information at www.uinr.ca.

Tities/Blue jay *Eats:* berries, nuts, seeds (rarely insects, mice, frogs, and other birds). *Eaten by:* hawks, falcons, raccoons, snakes, owls, and crows. *Other:* one of the characters in the Muin and the Seven Bird Hunters that follows in the core activity for this unit.





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Tupsi/alder *Eats:* water and nutrients from the soil. *Eaten by:* butterflies, moths, partridge, snowshoe hare, moose, beaver, deer, moose, and people, among many others. *Other:* tea and medicine; also an indicator species. When tupsi pollen covers water bodies, the brook trout have reached the upstream habitats and can be harvested.

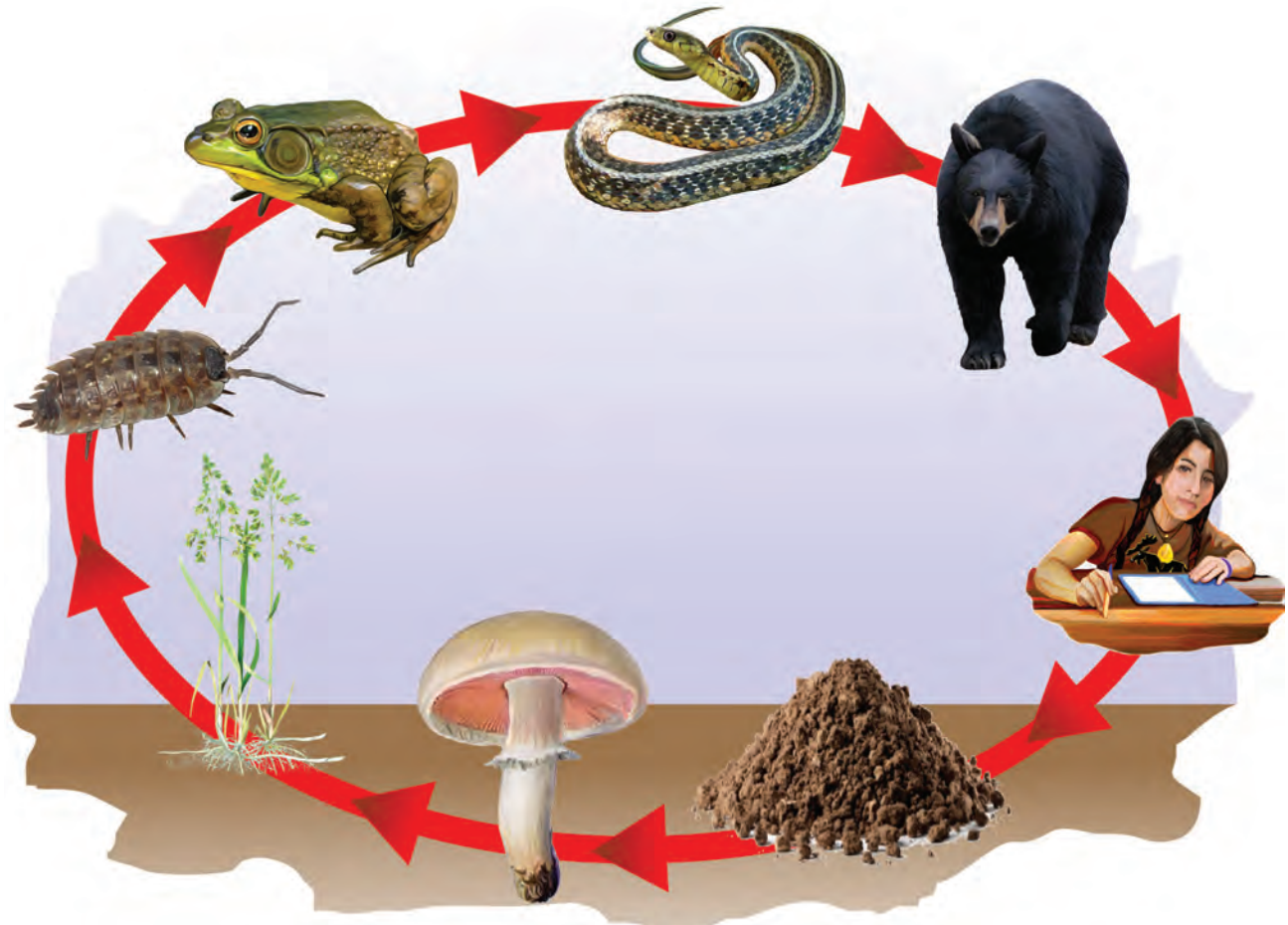
Wasoqetesinktew/firefly *Eats:* larvae are predators of other insects, snails, earthworms. Adults feed on nectar and may consume their mates. *Eaten by:* frogs, toads, other fireflies, bats, and mice. *Other:* they contain a chemical that can make mammals and birds vomit. Also an indicator species: when they emerge from winter hibernation, thick birchbark can be harvested, and when they begin to mate (their butts

light up), thin bark can be harvested.

Weti/earthworm *Eats:* organic matter, leaves, and humus. *Eaten by:* birds and particularly robins and gulls, snakes, turtles, frogs, toads, porcupines, raccoons, hedgehogs, foxes, and skunks.

Note that in some cases the Mi'kmaw translations may reflect only the species of the animal rather than the sub-species chosen to describe.

Primary sources of information include, the Animal Diversity Web at www.animaldiversity.org, the Nova Scotia Wildlife and Biodiversity inventory at novascotia.ca/natr/wildlife, and the Nova Scotia Museum at www.museum.novascotia.ca. Special thanks to Andrew Hebda of the Nova Scotia Museum for content review.



An example of a life cycle diagram. Similar drawings could be made by groups of students with the element cards.

