

TOPIC VII: The Amazing Potato and the History of Ireland

INTERDISCIPLINARY MIDDLE GRADES (4-8) PACKAGE

TITLE: Potatoes, Potatoes

AIM 7.3: Why are potatoes such a valuable food?

TEACHER BACKGROUND: No food in human history has had a harder time than the potato in fulfilling its promise as a food source. Wild potatoes were first harvested by mountain-dwelling people in South America before 6000 B.C. Later, people learned how to plant and grow their own potato crops. Eventually the potato became a staple crop of the Inca empire. Spanish explorers brought potatoes to Europe in the mid-1500s, but potatoes were not quickly accepted as a source of food. Some people cursed potatoes as an evil food because they were not mentioned in the Bible. Leprosy, consumption, rickets and warts were blamed on potato eating. Part of the potato's problem was that its biological relatives, deadly nightshade and mandrake, are poisonous.

Despite these problems, the potato finally assumed world-wide importance as a food crop because it has many advantages.

Today, potatoes have a reputation as a fattening food among health conscious Americans. But it is an unfair stereotype. Potatoes are actually one of the healthiest foods you can eat. With just some dairy products and greens added to a potato diet, potatoes are life-sustaining. The bad rap is because of the way that potatoes are usually prepared, either cooked with fat or smothered in it.

To prepare potatoes, clean them in water by rubbing the skin with a vegetable brush, sponge, or dish cloth. To peel the potatoes, use a vegetable parer and take off the thinnest possible layer of potato skin. This preserves the potato's vitamin and mineral content. One-third of the potato's nutrients are just beneath the skin. The less peeling you do before cooking, the less nutrients you lose. If you eat the skins, you get a fiber bonus as well.

REFLECTION: Jennifer Debler of Baldwin Middle School, Baldwin New York prefers to use the material in this lesson for individual student projects with students working primarily at home. Jennie Chacko had students in her classes at IS 292 in Brooklyn work with the material as expert groups. As a culminating activity, Jennie's students cooked Colcannon, a Potato and Cabbage Casserole, in class using electric mini-stoves and a toaster oven. Students were enthused by the cooking activity which involved them in working together and in calculations. They also enjoyed sharing the Colcannon with students in other classes.

AIM 7.3: Why are potatoes such a valuable food?

ASSESSMENT:

- Students will demonstrate their understanding of the impact of the potato on history and its value as a food through participation in group discussion, completion of activity sheets and presentations in class.
- Students will demonstrate their understanding of the impact of the potato on history and its value as a food through completion of individual projects.

MOTIVATIONAL ACTIVITY: On a map, point out the Andian region where potatoes were first cultivated. In your opinion, why would a vegetable like the potato spread around the world after the Colombian exchange?

TRANSITIONAL ACTIVITY: Explain the activity “Potatoes, Potatoes”.

ACTIVITY: Student cooperative learning teams complete either ACTIVITY SHEET 1- A Brief History of the Potato, ACTIVITY SHEET 2- Potatoes are a Health Food, and ACTIVITY SHEET 3- How to Cook Potatoes. As Expert groups, they report on their findings to the full class.

SUMMARY QUESTION: Why are potatoes such a valuable food?

HOMEWORK: Write a poem, song or story about the history of the potato.

PROJECTS:

- Use the information in this essay to develop a potato chronology.
- Develop an advertising campaign with posters, slogans, songs, and stories encouraging people to plant and eat potatoes.
- Prepare a research report that explains the importance of the nutrients provided by the potato.
- Design a poster that explains the nutritional value of the potato.
- Prepare a potato dish. Try the traditional Irish dish known as Colcannon.
- Create an illustrated recipe book including potato recipes from around the world.
- Collect international folk tales where potatoes are an important part of the story.

ACTIVITY SHEET 1 - "Potatoes, Potatoes": A Brief History of the Potato
(adapted from "Please Pass the Potatoes" in Jane Brody's Good Food Book, New York: Bantam Books, 1987)

No food in human history has had a harder time than the potato in fulfilling its promise. Wild potatoes were first harvested by mountain-dwelling people in South American before 6000 B.C. Later, people learned how to plant and grow their own potato crops. Eventually the potato became a staple crop of the Inca empire.

Spanish explorers brought potatoes to Europe in the mid-1500s, but potato's were not quickly accepted as a source of food. Some people cursed potatoes as an evil food because they were not mentioned in the Bible. Leprosy, consumption, rickets and warts were blamed on potato eating. Part of the potato's problem was that its biological relatives, deadly nightshade and mandrake, are poisonous.

Despite these problems, the potato finally assumed world-wide importance as a food crop because it has many advantages. First, it is adaptable to a wide range of growing conditions. Potatoes can grow at altitudes up to 14,000 feet, in climates that see little sun or warmth, and in soils that would otherwise sustain not much more than a few hardy weeds. About the only place potatoes do not do well is in humid jungles. Second, the potato is a high-yielding crop. Because more than one planting is possible in many areas, an acre of potatoes can yield twice as much food as an acre of grain. Third, potatoes are a highly versatile food. In addition to the many ways they can be prepared fresh, they can also be dehydrated (permitting lengthy storage), frozen, converted to alcohol, and used as starch, paste, and dye.

In 18th century Europe, Frederick the Great of Prussia and Antoine-Auguste Parentier of France helped make the potato a popular food item. Frederick believed that the potato, which was being used as food for cattle, was the answer to the problem of regularly occurring famines. In 1744, he ordered that potatoes be planted in his royal garden. He also had royal cooks devise new recipes for potatoes. Prestigious citizens were invited to feast where they tried the potato dishes and received copies of recipes and planting instructions. When Prussian peasants resisted his ideas, Frederick sent soldiers throughout the countryside to distribute seed potatoes. Then he decreed that anyone who refused to grow and eat the potatoes would have their nose and ears cut off. The plan worked, and potatoes soon became a basic part of the Prussian diet. During a war in the 1750s, potatoes helped prevent the starvation by both German soldiers and their French prisoners.

Antoine-Auguste Parmentier was one of the French prisoners who survived because of the potato. He convinced King Louis of France to allow him to grow potatoes in a field that was protected during the day by the King's royal guards. Local

peasants thought the potato was an important treasure and raided the field at night when the guards left. The potato, prestigiously name pomme de terre ("apple of the earth"), soon became a key ingredient in French cuisine.

In Ireland, the potato had an even more prominent role. During the sixteenth and seventeenth centuries, Irish farmers were plagued by continual wars between English armies and local Irish rebels. They discovered that fields of potatoes were more likely than other crops to survive the fires and raids of invading soldiers. Sustained by the nutritious potato, the Irish population exploded until by the mid-1800s it reached a density greater than that in China today.

The Irish consumption of potatoes was extraordinary by modern standards. An estimated seven million tons of potatoes were required each year to feed the population of Ireland in the 1840s. Adult male workers ate up to fourteen pounds of potatoes daily. Women and children over ten-years-of-age ate about eleven pounds daily. Younger children consumed about five pounds. The potatoes were eaten in three equal meals a day. They were mashed with buttermilk or seasoned with salt, cabbage, and fish when available.

Irish dependence on the potato as a source of food eventually led to disaster. In 1845, a devastating disease struck the Irish potato crop. It was a fungus that caused fields of potatoes to wither and rot. As a result of the potato blight, 1 million people died and another 1 million to 2 million Irishmen and women left their homeland to avoid starvation.

In North America, the potato began to take root after early Irish immigrants introduced it to New England in 1719. Cultivation was slow until a great wave of Irish immigrants arrived at the beginning of the nineteenth century. As Irish immigration swelled between 1840 and 1880, so did potato production. By 1900, Americans were eating 200 pounds of fresh potatoes per person each year, securing the potato's place as an American staple.

Questions

- 1- Where were potatoes first harvested?
- 2- Why did Europeans initially resist planting and eating potatoes?
- 3- Why is the potato now considered such a useful crop?
- 4- How did Frederick the Great increase potato production in Prussia?
- 5- Do you agree with Frederick's strategies? Explain your answer.
- 6- Why were potatoes finally accepted in France?
- 7- Why did Irish farmers decide to grow potatoes?
- 8- How did the potato bring both benefits and hardships to Ireland?
- 9- Why did potato production expand in the United States?
- 10- Why are potatoes consider a major part of the "Colombian exchange"?

ACTIVITY SHEET 2 - "Potatoes, Potatoes": Potatoes are a Health Food
(adapted from "Please Pass the Potatoes" in Jane Brody's Good Food Book, New York: Bantam Books, 1987)

Today, potatoes have a reputation as a fattening food among health conscious Americans. But it is an unfair stereotype. Potatoes are actually one of the healthiest foods you can eat. The bad rap is because of the way that potatoes are usually prepared, either cooked with fat or smothered in it. French-frying sliced potatoes in oil adds 200 empty calories to a typical serving. Adding a single tablespoon of butter or sour cream to a medium-sized baked potato doubles its calories. Mashed potatoes are frequently served with butter and milk. In potato salad, potatoes are boiled, cut up, and covered with mayonnaise.

Rarely is the potato eaten without added fat, although unadulterated or seasoned only with noncaloric spices or low-calorie dressings, it can be delicious as well as nutritious. The potato itself has fewer calories than many foods people turn to when trying to lose weight. A medium-sized potato weighing 5 ounces that has been baked, boiled, or steamed contains about 100 calories, less than 1/2 cup of creamed cottage cheese, a 3-ounce hamburger, a cup of plain yogurt, or an 8-ounce glass of orange juice.

Potatoes are relatively low in calories because they contain almost no fat. Nearly 100 percent of the potato's calories come from carbohydrates (mostly starch) and protein. The potato is 78 percent water by weight, and water has no calories. Potatoes also contains dietary fiber (especially if eaten with the skin), and provide the bulk that dieters need to satisfy their hunger before they overconsume calories. In an experiment at an American college, students lived on a 1,000-calorie-a-day potato diet. With belly-filling potatoes included in every meal and snack, the students lost an average of 14 pounds in 8 weeks.

With just some dairy products and greens added to a potato diet, potatoes are life-sustaining. A Scandinavian man lived healthfully for 300 days on only potatoes with a small amount of margarine. According to nutrition labeling approved by the Food and Drug Administration, a medium (5 ounce) potato contains 3 grams of protein, 22 grams of carbohydrate, 0 grams of fat, and about 100 calories (or 4 percent to 5 percent of the calories needed by the average adult in a day). Table 1 provides a breakdown of what you get for those calories as percentages of U.S. Recommended Daily Allowances (USRDA) for various essential nutrients.

Table 1 Nutrients in a Potato (5 ounces, 100 calories)

Nutrient	% USRDA	Nutrient	% USRDA	Nutrient	% USRDA
Protein	6	Iron	10	Magnesium	8
Vitamin C	35	Vitamin B ₆	20	Zinc	4
Thiamin	4	Folacin	8	Copper	10
Riboflavin	2	Phosphorus	8	Iodine	15
Niacin	10				

The vitamin-C content of the potato varies with age; new potatoes have the most, with a 5 ounce potato supplying more than half the USRDA recommended percentage, and those stored six months have only a third the original amount. The potato also contains trace minerals that are essential to human nutrition. Among them are manganese, chromium, selenium, and molybdenum. The largest concentration of vitamins and minerals is found in and just beneath the skin, so potatoes are most nutritious eaten skin and all or cooked with the skin on and peeled afterward.

The potato is an ideal food for preventing and treating high blood pressure. It is naturally low in sodium and supplies about 20 percent of the potassium recommended for daily consumption. The potato is considered a nutrient bargain because it provides people with a large percentage of essential nutrients at the cost of relatively few calories. The protein in a potato is also high-quality because it contains a good balance of essential amino acids. Essential amino acids are the protein building blocks that must be provided together in the diet for the body to be able to make full use of the protein you eat. According to food scientists, potatoes provide almost as much protein as meat.

Questions

- 1- Why do potatoes have a reputation as an unhealthy food?
- 2- How many calories are in a medium-sized potato?
- 3- Why are potatoes so low in calories?
- 4- Why is fiber an important part of the human diet?
- 5- Potatoes provide ten percent or more of which the daily requirements?
- 6- How can people be certain to receive the most food value from potatoes?
- 7- Why are potatoes considered a nutrient bargain?
- 8- In your opinion, should young people be discouraged from eating French-fried potatoes and potato chips because they are cooked in oil? Explain your views.

ACTIVITY SHEET 3 - "Potatoes, Potatoes": How to Cook Potatoes

(adapted from "Please Pass the Potatoes" in Jane Brody's Good Food Book, New York: Bantam Books, 1987)

Clean potatoes in water by rubbing the skin with a vegetable brush, sponge, or dish cloth. To peel the potatoes, use a vegetable parer and take off the thinnest possible layer of potato skin. This preserves the potato's vitamin and mineral content. One-third of the potato's nutrients are just beneath the skin. The less peeling you do before cooking, the less nutrients you loss. If you eat the skins, you get a fiber bonus as well.

Peeled potatoes darken if you let them stand around uncooked. Soaking them in water slows the darkening, but it will also result in a loss of nutrients. To keep potatoes from discoloring without sacrificing their food value, toss them with some lemon juice dissolved in a little water. Still better, do not peel or cut them until just before you are ready to cook them. Best of all, do not peel them at all.

Yields of Potatoes

1 pound of potatoes (three medium potatoes) makes any of the following:
3 cups of sliced potatoes
2-1/2 cups of diced potatoes
2 cups of mashed potatoes
2 cups of French fries
3 servings of potato salad

Steaming: This is one of the best ways to preserve a potato's food value because few nutrients are lost during the cooking. Use a steamer pot (a spaghetti cooker will work as well as one designed for steaming vegetables or Chinese food) or an inexpensive steamer rack that fits into a saucepan. Improvise a potato steamer by inserting custard cups or balls of crumpled foil on the bottom of a saucepan and placing the potatoes on these little platforms. The pot's lid should fit tightly. Put water at the bottom of the pan and bring it to a boil. Add the potatoes and cover the pot. Steam the potatoes until they are tender when pierced with a fork. Depending on their size, whole potatoes usually take 30 to 45 minutes to steam. Cut potatoes take 20 to 30 minutes to steam. If the pot lid does not fit tightly, check once or twice to make sure the water has not cooked out.

Boiling: Put about one inch of water (if desired, add 1/8 of a teaspoon of salt) in a saucepan with a thick bottom. Place the potatoes in the saucepan and cover with a tight-fitting lid. Cook the potatoes until they are fork-tender -- about 30 to 40 minutes if they are whole and 20 to 25 minutes if they are cut up. If the lid is not tight, check to be sure the water does not boil out. If you are planning to bake bread or make soup in the near future, save the cooking water in the refrigerator and use it in your recipe. That way you will retrieve any nutrients that cooked out of the potatoes. Potatoes can also be peeled, cut, and boiled directly in a soup or casserole.

Baking: Potatoes do not require a specific oven temperature for cooking. This makes it possible to bake them at the same time you bake or roast other foods. At 400 degrees, medium-sized potatoes will bake in about 40 to 45 minutes. The lower the temperature,

the longer the potatoes take to bake through. You can speed the baking by using "potato nails" (aluminum nails inserted lengthwise through the center of the potato) or standing the potatoes on the spikes of a multi-potato baker. If you are not using nails or spikes, it is a good idea to pierce the potato skin in a few places before baking. This allows steam to escape and keeps the potato from bursting. Do not wrap the potato in foil unless you want a steamed flavor. It also takes longer to bake a foil-wrapped potato. Potatoes can be baked directly on the oven rack, on a cookie sheet, or in a stove-top potato baker. Test the potato for doneness by gently squeezing it (be sure to protect your hand with a pot holder) or piercing it with a skewer or fork.

Microwaving: This is an ideal method for the busy or hungry cook who cannot wait 45 minutes to bake a potato. It has become very popular with single folks and working parents. A favorite late supper is a microwave baked potato topped with yogurt and chives. It can be ready in the five minutes. Wash and dry the potato, and prick it with a fork. Place it on a double layer of paper toweling in the center of the microwave. For cooking more than one potato, arrange them as if each potato were the spoke of a wheel radiating from the center of the microwave floor. A 6-ounce potato will usually take about 4 minutes, with 1 to 2 minutes extra for each additional potato. Be sure to turn the potato over halfway through this process. Warning: Do not put metal or foil in a microwave oven.

Roasting: If prepared along with roasted meat, chicken, or turkey, arrange peeled, cut-up potatoes around the edges of the pan about 1-1/2 hours before you expect the meat or bird to be done. To roast potatoes by themselves, boil or steam them first for about 10 minutes, peel them, and then arrange them in a shallow pan. They will have a better flavor if you brush them with a small amount of melted butter, melted margarine, or vegetable oil. Roast whole potatoes at 400 degrees for about 45 minutes.

French-Frying: Slice potatoes into 1/4 inch strips. Heat oil to about 375 to 400 degrees. Fry potatoes in small batches to keep the oil temperatures from dropping drastically. Use a deep fryer or heavy saucepan with about 4 inches of vegetable oil. Frying is easiest if you can put the potatoes into a basket that fits into the pot. Otherwise, use a slotted spoon or small strainer to remove the potato strips from the oil. The potatoes will take about five minutes to cook through. Be sure to drain off the excess oil by placing the cooked potatoes on paper towels. You can keep the first batches warm in a 300-degree oven while the rest are cooking.

Questions

- 1- When preparing potatoes, why is it important to eat the skins or to peel away as little as possible?
- 2- How can you keep peeled potatoes from changing color?
- 3- How many serving of mashed potatoes can you make from three medium-sized potatoes?
- 4- Which method of cooking best preserves the nutritional value of potatoes?
- 5- Why is it important to have a tight-fitting lid when steaming or boiling potatoes?
- 6- What adjustment should a cook make if they bake a potato in an oven set at a temperature lower than 400 degrees?
- 7- Why is microwaving a popular way to cook potatoes?
- 8- In your opinion, which style of potatoes tastes the best? Explain.

Colcannon (Potato and Cabbage Casserole)

Colcannon, a combination of mashed potatoes and a member of the cabbage family (cabbage or kale), is a favorite food in Ireland. Colcannon is traditionally eaten at Halloween, with symbols of fortune buried in it (a golden ring predicting marriage within a year, a sixpence for forthcoming wealth, a thimble for spinsterhood, and a button for bachelorhood). With or without the symbols, it will be your good fortune to try this simple version. This recipe makes four servings. The dish can be prepared in advance, refrigerated, and heated at serving time.

Ingredients

1 pound (3 medium) all-purpose potatoes, washed but not peeled
4 cups water
1 pound (1/2 medium head) green cabbage, shredded (4 cups)
1 large onion, chopped (1 cup)
1/4 cup skim or low-fat milk
1 tablespoon margarine
black pepper to taste
Salt, if desired, to taste

Instructions

1. Boil the potatoes in lightly salted water for 40 minutes until they are very tender but not mushy. Drain the potatoes and save the cooking liquid. Set the potatoes aside to cool.
2. Use the potato water (add more water if necessary to cover the vegetables) to boil the cabbage and onion for about ten minutes until softened. Drain the vegetables thoroughly and set them aside.
3. When the potatoes are cool enough to handle, peel off the skin, place the potatoes in a bowl, add the milk and margarine, and mash them until they are smooth.
4. Add the boiled cabbage and onion to the potato mixture and mix.
5. Season the colcannon with pepper and salt and transfer it to a greased casserole or shallow baking dish. Before serving the colcannon, heat in a moderately hot oven (15 minutes at 350°).