

The e-Potato: A Multidisciplinary and Multimedia Program

Acknowledgements—

Developing and Testing the Materials

The *e-Potato* is a peer-reviewed curriculum. It was designed by two University of Idaho faculty members of the College of Agricultural and Life Sciences (CALs)—Dr. Martha Raidl and Rhea Lanting—and College of Education (COE), Cassidy Hall, for middle school students. In addition, faculty within CALs Communications provided oversight of the four video cooking clips. Participants in the four video clips included:

Chef Susan Ettesvold
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The external reviewers who provided input included University of Idaho (UI) Extension faculty, as subject matter specialists and middle school teachers, as individuals who would use the lessons in their classroom. Listed below are the individuals who provided input:

Dr. Lynn Paul, Extension Specialist, Montana State University
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Instructor Information

Target Audience. *The e-Potato: A multidisciplinary and multimedia program*, was designed for 6th to 8th grade students. It uses potatoes, one of the most commonly consumed vegetables, as a way to cover youth education standards on science, technology, engineering, math, nutrition, health, history, geography, and agriculture.

Topics Covered. Examples of topics addressed in this multidisciplinary program include: history and geography of potatoes, from farm to fork, nutritional components and health benefits, potato products, planning healthy meals, and calculating potato serving sizes.

Educational Best Practices. To stimulate and maintain youth interest in the lessons, a multimedia approach using engaging technology was incorporated with best practices in education. Best practices include using student surveys, hands-on experiences with taste testing, career connections, current events, and video clips. Interactive activities include using GPS Mapping, Prezi, Kahoot, EdPuzzle, and a virtual tour of a grocery store and the human body.

Technology Required. The lessons *require internet access* and are taught using a variety of devices, such as iPads, Chromebooks, laptops, and cloud-based technology. This allows the students to create and share content synchronously with others for enhanced learning. In addition, Google-docs are used for data collection, measuring changes in students' knowledge, skills, and behaviors.

Teaching Format. Each lesson is led by a teacher/instructor who will guide the students through the lesson. The lessons require that the entire class, i.e., teacher/instructor and every student, have their own device. To keep the students on-task and involved with the lesson, the teacher needs the students to follow the lesson instructions so they can easily navigate through the lessons.

Compatible Software Programs: The lessons use various software programs that are compatible on a variety of devices, such as “padlet,” and “Prezi.” Padlet is an online bulletin board that lets us display text, audio, video, and graphics. We can ask multiple-choice and open ended questions whereby students can post their responses using “sticky notes.”(Source = <http://teachinghistory.org/digital-classroom/tech-for-teachers/24636>). Prezi combines motion, zoom, and spatial relationships to engage students and help them remember information (Source: <https://prezi.com>).

Components of the Lesson. Each lesson contains a goal, objectives, information on key concepts, lecture notes, hands-on activities, evaluation tools, and optional enrichment activities. The teacher's lecture notes/speaking points for the information they need to cover during the lesson are shown in italics.

The “*” denotes the critical student activity and/or goal of a particular lesson.

Education Standards. This curriculum covers content and common core education standards. Since the curriculum was developed and tested in Idaho, their education standards are referenced.

Overview of the Four Lessons

- **Lesson 1:** *History and Production of Potatoes.* You will learn where potatoes were first grown and how they ended up in Europe, Russia, the U.S., China, and India. You will also learn which countries today grow the most potatoes, and how the Idaho environment makes potatoes taste extra good, and how potatoes travel from the field to the table.

- **Lesson 2:** *Types of Potatoes and Potato Products.* You will learn about the different vegetable color groups and which ones contain potatoes, and learn about the eight categories of potato products.
- **Lesson 3:** *Are Potatoes a Super Food?* You will learn the components of the Nutrition Facts Label and apply this information to three potato products and the effectiveness of the potatoes' vitamins and minerals in helping your body stay healthy.
- **Lesson 4:** *Potatoes on MyPlate.* You will learn where potatoes and potato products fit on *MyPlate* as part of a healthy diet and view four potato cooking video clips.

Before you start the e-Potato lessons have students:

- If using iPads, download the two Apps – Padlet and Prezi.
- Complete the pre-survey at the e-Potato website.

Education Standards for Lesson One

Idaho Common Core English Language Arts Standards, History/Social Studies, Grades 6-8 **[CCSS.ELA-LITERACY.RH.6-8.2](#)**

Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source, distinct from prior knowledge or opinions.

* Students will use a map to answer questions about the history of potatoes.

Idaho Content Standards | Grades 6-9

Geography-Eastern Hemisphere

Standard 2: Geography, Goal 2.1—Analyze the spatial organizations of people, places, and environment on the earth’s surface.

6-9.GEH.2.1.4: Analyze visual and mathematical data presented in charts, tables, graphs, maps, and other graphic organizers to assist in interpreting a historical event. (473.01a)

*Students will use a map to determine how potatoes traveled from South America to Europe and North America.

Standard 2: Geography, Goal 2.5—Explain how geography enables people to comprehend the relationships between people, places, and environments over time.

6-9.GEH.2.5.3: Give examples of how land formations and water, climate, and natural vegetation have influenced historical trends and developments in the Eastern Hemisphere. (469.06c)

*Students will learn which states in the U.S. grow potatoes and, in Idaho, why they are mainly grown in the southern portion of the state.

Standard 2: Geography, Goal 2.2—Explain how human actions modify our physical environment and how physical systems affect human activity and living conditions.

6-9.GEH.2.2.5: Analyze and give examples of the consequences of human impact on the physical environment and evaluate ways in which technology influences human capability capacity to modify the physical environment. (469.05a)

*Students will learn how technology was used to move potatoes from the field to the table and will learn about precision farming.

Idaho Content Standards | Grades 6-9 **World History and Civilization**

Standard 2: Geography, Goal 2.3—Trace the migration and settlement of human populations on the earth’s surface.

6-9.WHC.2.3.3: Describe how physical features such as mountain ranges, fertile plains, and rivers led to the development of cultural regions. (463.03c)

*Students will learn how similar climate and geographical features resulted in the following countries producing potatoes: China, India, Russia, Ukraine, and U.S.

Idaho Content Standards | Grades 6-8
Information and Communication Technology

Standard 2: Communication and Collaboration

Goal 2.1: Use digital media and environments to communicate and work collaboratively to support individual learning and to contribute to the learning of others.

6-8.ICT.2.1.1. Inquire, interact, and communicate ideas, employing a variety of digital media and environments.

*Students will utilize Padlet, Google Maps, and Google Forms on various devices to learn and share information.

Education Standards for Lesson Two

Idaho Common Core English Language Arts Standards, History/Social Studies, Grades 6-8
[CCSS.ELA-LITERACY.RH.6-8.2](#)

Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.

*Students will use images and text to identify potato color groups and complete group and individual activities on potatoes.

Idaho Common Core English Language Arts Standards, Science & Technical Subjects, Grades 6-8

[CCSS.ELA-LITERACY.RST.6-8.3](#)

Precisely follow a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

*Students will record individual and team data from potato observations, including visual observation and battery results to determine electrical activity contained in a potato.

Idaho Content Standards | Grades 6-8

Health Education

Standard 2: Analyzing Influences, Goal 1.1—Students will analyze the influence of family, peers, culture, media, technology, and other factors on health behavior.

6-8.H.2.1.1: Examine how family, culture, peers, school, and community influence healthy and unhealthy behaviors.

6-8.H.2.1.2: Analyze the influence of media and technology on personal and family health.

*Students will learn factors that contribute to annual potato chip consumption on 19 pounds per year for Americans.

Standard 3: Accessing Information, Goal 1.1—Students will demonstrate the ability to access valid information and products and services to enhance health.

6-8.H.3.1.2: Access valid health information from home, school, and community.

*Students will learn that potatoes fall in four of the five fruit and vegetable color groups and identify dehydrated potato ingredients in nutrition facts labels.

Idaho Content Standards | Grade 6 Science

Standard 5: Personal and Social Perspectives; Technology

Goal 5.2: Understand the Relationship between Science and Technology

6.S.5.2.1 Describe how science and technology are part of our society. (625.01.a)

*Students will learn how potatoes are processed into frozen French fries, potato chips, and dehydrated potatoes using various technologies.

Standard 1: Nature of Science

Goal 1.2: Understand Concepts and Processes of Evidence, Models, and Explanations

6.S.1.2.1 Explain how observations and data are used as evidence on which to base scientific explanations and predictions. (618.02.a)

6.S.1.2.2 Use observations to make inferences. (618.02.b)

*Students will record individual and team data on potato observations and analyze results.

Idaho Common Core Standards | Grade 6

Mathematical Practice, Expressions, and Equations

*Reason about and solve one-variable equation and inequality.

[CCSS.MATH.CONTENT.6.EE.B.5](#)

Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

*Students will use a nutrition facts label to calculate the amount of potato chips and calories the average American consumes annually.

Idaho Content Standards | Grades 6 – 8 Information and Communication Technology

Standard 2: Communication and Collaboration

Goal 2.1: Use digital media and environments to communicate and work collaboratively to support individual learning and to contribute to the learning of others.

6-8.ICT.2.1.2 Collaborate with others, using digital tools and media to identify and research an issue, compare solutions and make a decision.

*Students will utilize Padlet and Google Forms on various devices to learn and share information.

Education Standards for Lesson Three

Idaho Common Core English Language | Grades 6-8

Arts Standards, Science & Technical Subjects

CCSS.ELA-LITERACY.RST.6-8.9

Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

*Students will compare and contrast different types of fresh and frozen potatoes to determine portion size.

Idaho Content Standards Health Education | Grades 6-8

Standard 1: Comprehend Core Concepts, Goal 1.1—Students will comprehend core concepts related to health promotion and disease prevention to enhance health including: alcohol, tobacco and other drugs; nutrition and physical activity, injury prevention and safety; mental, emotional and social health; prevention and control of disease; consumer and community health; growth, development and family life; and environmental health.

6-8.H.1.1.1 Analyze the relationship among behaviors, body systems, and personal health.

*Students will learn the relationship between macro and micro nutrients and body health.

Standard 5: Decision Making, Goal 1.1-Students will demonstrate the ability to use decision-making skills to enhance health.

6-8.H.5.1.4. Distinguish between healthy and unhealthy alternatives to health-related issues or problems.

6-8.H.5.1.6. Choose healthy alternatives over unhealthy alternatives when making a decision.

*Students will evaluate four potato nutrition facts labels and determine which one(s) are healthy.

**Idaho Content Standards | Grade 6
Science**

Standard 1: Nature of Science

Goal 1.6: Understand Scientific Inquiry and Develop Critical Thinking Skills

6.S.1.6.2. Conduct scientific investigations using a control and variables. Repeat same experiment using alternate variables. (619.02.b)

Standard 2: Physical Science

Goal 2.5: Understand Chemical Reactions

**Idaho Content Standards | Grades 6 – 8
Information and Communication Technology**

Standard 2: Communication and Collaboration

Goal 2.1. Use digital media and environments to communicate and work collaboratively to support individual learning and to contribute to the learning of others.

6-8.ICT.2.1.2. Collaborate with others, using digital tools and media to identify and research an issue, compare solutions and make a decision.

*Students will utilize Padlet, on various devices to learn and share information.

Education Standards for Lesson Four

**Idaho Common Core English Language Arts Standards | Grades 6-8
Science & Technical Subjects**

CCSS.ELA-LITERACY.RST.6-8.9

Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

Idaho Content Standards | Grades 6-8

Health Education

Standard 7: Practice Healthy Behavior, Goal 1.1—Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.

6-8.H.7.1.2 Demonstrate healthy practices and behaviors that will maintain or improve the health of self and others.

Idaho Content Standards | Grades 6 – 8
Information and Communication Technology

Standard 2: Communication and Collaboration

Goal 2.1: Use digital media and environments to communicate and work collaboratively to support individual learning and to contribute to the learning of others.

6-8.ICT.2.1.2 Collaborate with others, using digital tools and media to identify and research an issue, compare solutions and make a decision.

*Students will utilize cloud based technology (e.g. Padlet, Prezi) on various devices to learn and share information.