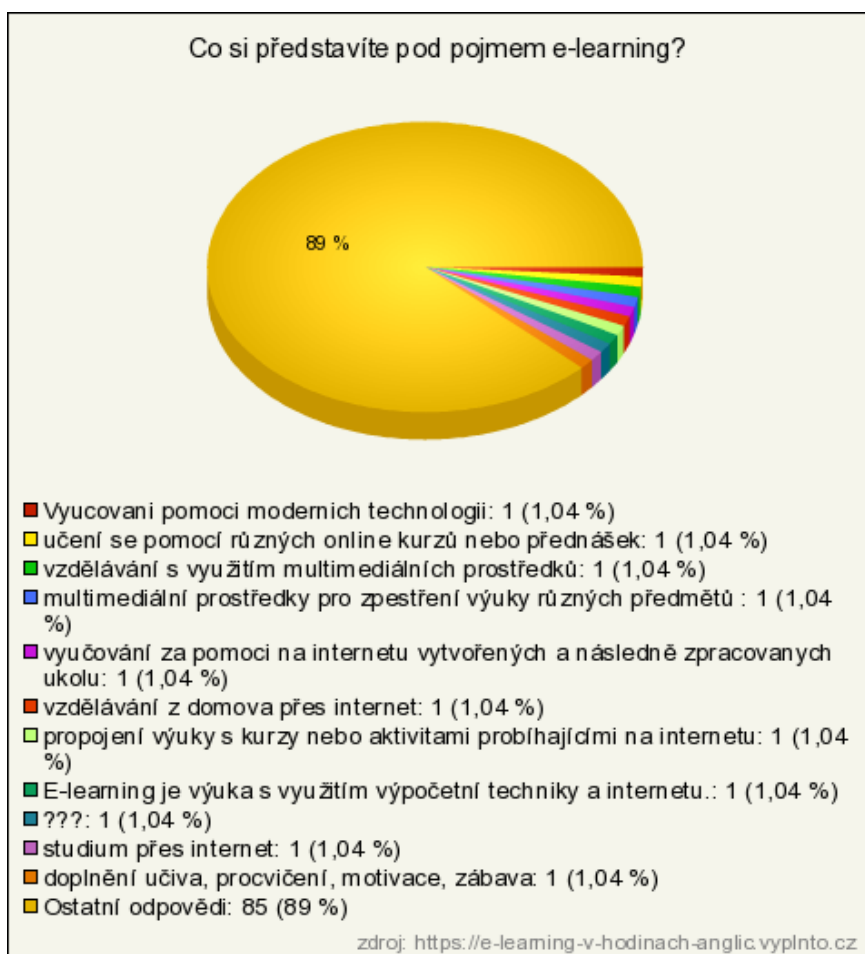
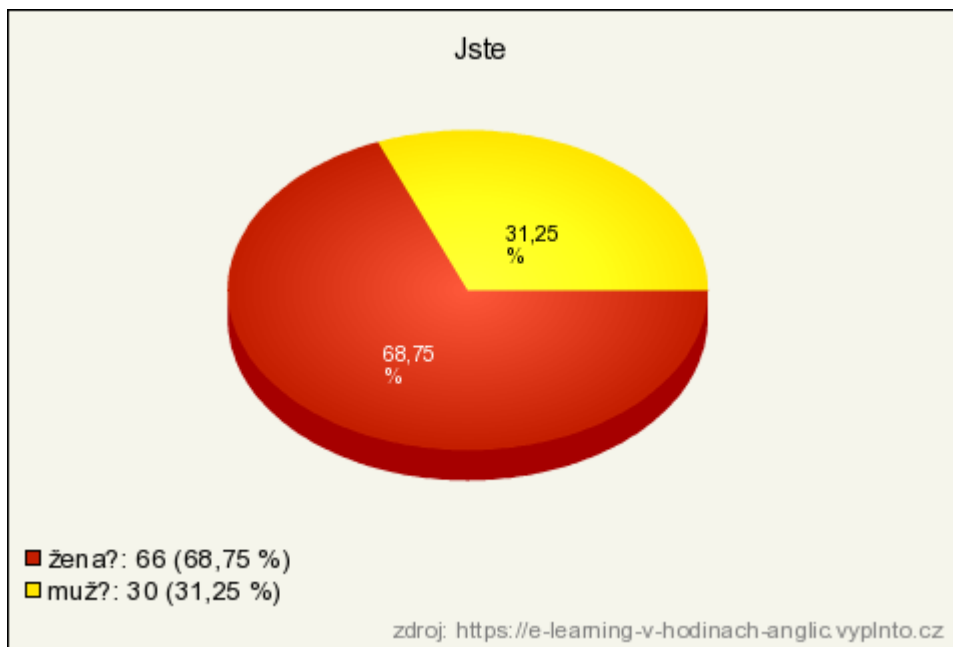


Appendices

Appendix 1. Graphs from the questionnaire



Appendix 2. Sample of the questionnaire

vyhodnocení dotazniku.pdf - Adobe Acrobat Reader DC

Domovská stránka Nástroje vyhodnocení dotaz... x

Přihlásit se

8 / 97

100%

Unikátní ID na Vyplňto.cz: 4843093
Datum a čas vyplnění: 2017-01-15 18:53:07
Délka vyplňování: 00.03:37
Parametry a identifikace:

1.) Jste **žena**?

2.) Jste aktivním vyučujícím angličtiny? **ano**

3.) Jak staré žáky/studenty učíte? (třídy nebo typ školy) **Střední odborná zdravotnická škola**

4.) Ve kterém regionu nebo městě působíte? **praha**

5.) Co si představíte pod pojmem e-learning? **propojení výuky s kurzy nebo aktivitami probíhajícími na internetu**

6.) Máte nějakou zkušenost s e-learningem? **ano, jako student**

7.) Specifikujte prosím e-learningový program, se kterým jste se setkali **moodle**

8.) Jaké výhody podle vás e-learning přináší? **žáci/studenti považují využívání IT prostředků ve výuce za atraktivní, odpovídá to současnému společenskému vývoji, je v souladu s různými studijními typy žáků**

9.) Jaké jsou podle vás nevýhody e-learningu? **nekompetentnost žáků/studentů, omezování přímé komunikace, podpora trávení času u počítače**

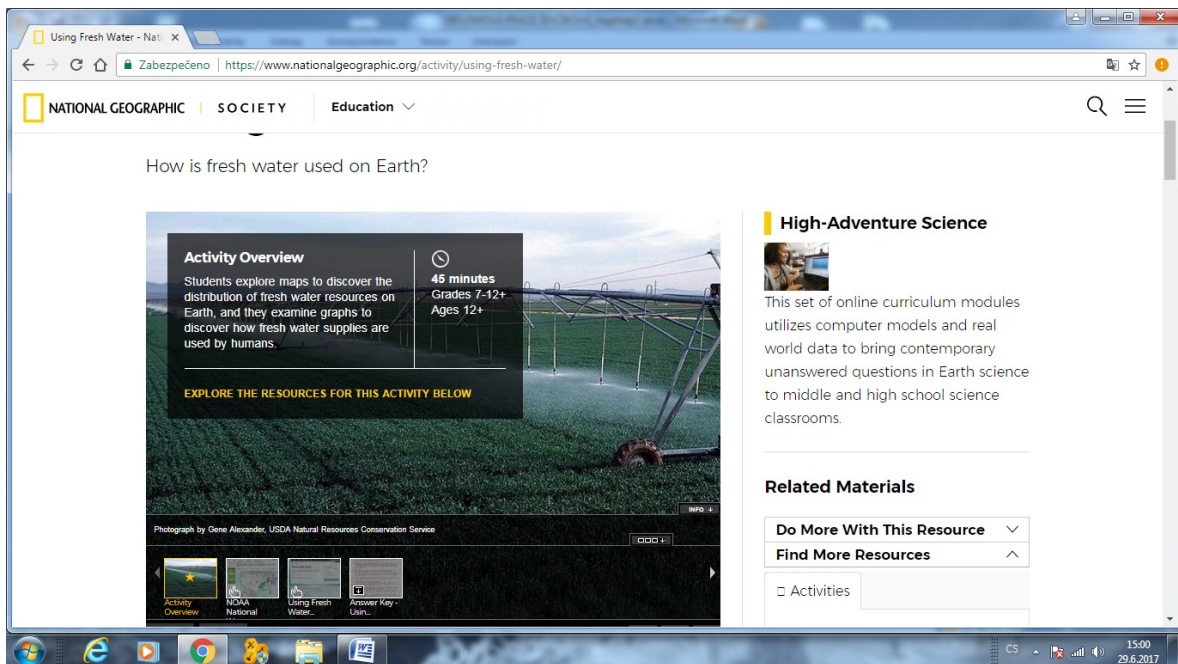
10.) Pokud při výuce využíváte nebo jste využívali možnosti e-learningu napište prosím jak (program, server, web,...) **nevím, jestli je to elearning, ale posílám studentům interaktivní cvičení z helpforenglish, English4you a dalších**

11.) Doporučili či nedoporučili byste tuto formu výuky pro ZŠ a SŠ a proč? **podle toho komu**

12.) Jaké další možnosti e-learningu znáte?

CS 19:43 7.7.2017

Appendix 3. Example of the lesson plan: “Using fresh water” from the National Geographic website

The image is a screenshot of a web browser displaying the National Geographic website. The page title is "Using Fresh Water - National Geographic". The URL is "https://www.nationalgeographic.org/activity/using-fresh-water/". The page features a main heading "How is fresh water used on Earth?". Below this is a large image of a field with a center pivot irrigation system. Overlaid on the image is a dark box with white text: "Activity Overview", "Students explore maps to discover the distribution of fresh water resources on Earth, and they examine graphs to discover how fresh water supplies are used by humans.", "45 minutes", "Grades 7-12+", "Ages 12+", and "EXPLORE THE RESOURCES FOR THIS ACTIVITY BELOW". Below the image is a credit line: "Photograph by Gene Alexander, USDA Natural Resources Conservation Service". At the bottom of the image are four small icons: "Activity Overview", "NOAA National", "Using Fresh Water", and "Answer Key". To the right of the main image is a sidebar with the heading "High-Adventure Science" and a sub-heading "Related Materials". Under "Related Materials" are two dropdown menus: "Do More With This Resource" and "Find More Resources". Below these are two checkboxes: "Activities" and "Resources". The browser's taskbar at the bottom shows the Windows logo, several application icons, and the system tray with the date and time "15:00 29.6.2017".

Directions:

1. Engage students in thinking about how fresh water is used.

Tell students in this activity they will be taking a close look at how humans use water—both in direct and indirect ways. They will examine the relationship between freshwater distribution and populations, and they will analyze the costs and benefits of putting dams on rivers and streams. To begin, ask: *How do you use fresh water?* (Student answer will vary, but will include examples like the following: Fresh water is used for drinking, bathing, flushing toilets, and irrigating. Fresh water is also used in electricity production and manufacturing.)

2. Discuss the role of uncertainty in the scientific process.

Tell students that science is a process of learning how the world works and that scientists do not know the “right” answers when they start to investigate a question. We can see examples of scientists' uncertainty in the forecasting of precipitation amounts. Have students go to the [NOAA National Weather Service](#). Ask them to input their zip codes, hit “Go”, scroll down to the bottom of the page, and click on the “Hourly Weather Graph”. This page shows the hourly weather forecast for your area. The first box shows the predicted temperature and dew point (along with wind chill or heat index, when applicable). The second box shows the predicted wind speed and direction. The third box shows the predicted sky cover (i.e. cloud cover), relative

humidity, and chance for precipitation. The boxes below that line show whether the precipitation is likely to be rain, snow, freezing rain, or sleet. Point out the line for precipitation potential (the brown line). Ask:

Why is the precipitation shown as a “%”? (Precipitation is dependent on other factors, such as relative humidity and temperature. It is more likely to precipitate when the temperature is the same as or lower than the dew point.)

If there is a likelihood of precipitation, why is the amount of rain/snow shown as ranges? (The amount of precipitation that will fall is dependent on the amount of moisture in the atmosphere. The atmosphere is continually changing, so the amounts are guidelines for what could happen rather than perfect predictions.)

**If there is no or low likelihood of precipitation in your area, you may want to find a different location (in the United States) that has a higher likelihood of precipitation. You can look at a current weather map (radar) to find where in the United States precipitation is happening currently. Your students will then be able to see scientists' forecasts of precipitation amounts represented as a range overlaid on the bar graphs.*

Tell students they will be asked questions about the certainty of their predictions and that they should think about what scientific data are available as they assess their certainty with their answers. Encourage students to discuss the scientific evidence with each other to better assess their level of certainty with their predictions.

3. Introduce the concept of systems in Earth's water resources.

Tell students that forecasting what will happen to Earth's fresh water supplies is a complicated process because there are many different interacting parts. Tell students that scientists think about how one part of the system can affect other parts of the system. Give students a simple example of a system, as described in the scenario below.

On an island, there is a population of foxes and a population of rabbits. The foxes prey on the rabbits.
Ask:

When there are a lot of rabbits, what will happen to the fox population? (It will increase because there is an ample food supply.)

What happens to the fox population when they've eaten most of the rabbits? (The foxes will die of starvation as their food supply decreases.)

What happens to the amount of grass when the fox population is high? (The amount of grass will increase because there are fewer rabbits to eat the grass.)

If there is a drought and the grass doesn't grow well, what will happen to the populations of foxes and rabbits? (The rabbit population will decrease because they have a lesser food supply. The fox population should also decrease as their food supply decreases.)

Humans introduce dogs to the island. The dogs compete with the foxes over the rabbit food supply. Ask: *What will happen to the populations of foxes, rabbits, and grass after the dogs are introduced? (The foxes will decrease because they are sharing their food supply, the rabbits will decrease because they have more predators, and the grass will do well because of the lowered impact of the smaller rabbit population.)*

Tell students that simple cause-effect relationships can expand into more complex system relationships. Let students know that they will be exploring the relationship between how sediments and rock types affects groundwater movement. Encourage students to think about how human actions play a role in changes in the flow of water and in freshwater availability.

4. Have students launch the Using Fresh Water interactive.

Provide students with the link to the Using Fresh Water interactive. Divide students into groups of two or three, with two being the ideal grouping to allow groups to share a computer work station. Tell students that they will be working through a series of pages of data with questions related to the data. Ask students to work through the activity in their groups, discussing and responding to questions as they go.

Tell students that this is Activity 2 of the **Will There Be Enough Fresh Water?** lesson.

5. Discuss the issues.

After students have completed the activity, bring the groups back together and lead a discussion focusing on these questions:

Even if you live in an area where fresh water is plentiful, why do you have to be concerned about the freshwater supply? (You should still be concerned about the freshwater supply because it can be contaminated by human actions. This would make the fresh water useless even if there was a lot of it.)

Are the benefits of dams worth the costs of dams? (Answers will vary. Some of the benefits of dams are flood control, recreation, and electricity production. Some of the costs of dams are habitat disruption, sediment depletion of river deltas, and loss of surrounding land.)

What are some ways that humans have affected the quantity and quality of water supplies around the world? (Humans have changed the surface, which has allowed less water to infiltrate the surface. They have pulled water out of very deep aquifers in desert areas. They have inadvertently contaminated some water supplies.)

Informal Assessment:

1. Check students' comprehension by asking them the following questions:

How are freshwater resources distributed on Earth?

What are some direct and indirect uses of water?

2. Use the answer key to check students' answer on embedded assessments.

Objectives:

1. Subjects & Disciplines:

– Earth science

– General science

2. Learning Objectives:

Students will: – describe the relationship between freshwater distribution and populations

– list direct and indirect uses of fresh water

– describe some of the costs and benefits of putting dams on rivers and streams

3. Teaching Approach

– Learning-for-use

4. Teaching Methods

- Discussions
- Multimedia instruction
- Self-paced learning
- Visual instruction
- Writing

5. Skills Summary

This activity targets the following skills:

- 21st Century Student Outcomes
- Information, Media, and Technology Skills
- Information, Communications, and Technology Literacy
- Learning and Innovation Skills
- Critical Thinking and Problem Solving
- Critical Thinking Skills
- Analyzing
- Evaluating
- Understanding

Background Information:

Freshwater resources are unevenly distributed on Earth's surface. This is due to climatic conditions (precipitation and temperature) and to geological conditions (the ability of water to percolate into the groundwater).

Water is used for many different purposes. Some uses are clear: water for drinking, bathing, and watering plants. Other uses are hidden: industrial processes, electricity production, manufacturing. The obvious uses are called "direct usage"; the hidden uses of water are called "indirect uses".

As the human population has grown, water use for agricultural, industrial, and municipal uses has increased. Where there is a large amount of water available, there have been relatively few problems. But where water availability is limited, the increased water usage has led some communities to impose bans on unnecessary water use.