***WABS STEM PBL Unit/Lesson Plan Overview***

**Title of PBL Unit**

Target Grade Level(s): 3rd and 4th grade

Subject(s): Technology

Author(s): Ana Romero, Crystal Goodwin, Nikki Vannatter

**Problem Statement: Technology accessibility and the virtual world offer a wide array of new possibilities for students. Effectively the world has never been more open to interaction and collaborative work. However, to the question of how can students impower themselves in order to navigate the virtual world safely and securely.**

**Unit Overview and Table of Contents**

**1.0 Introduction**

**1.1Crystal- Privacy and Security**

**1.2Nicky- Hey Buddy, What’s Your Password**

**1.3Ana Say-NO to cyberbullying. How to recognize, address, and stop it**

**1.4 Barbara - Career Connections**

In the digital world there are many threats and cyber security scenarios students will need to face. With the world ever changing and open access to students as never before, it has become necessary to empower students with information on how to navigate the challenges they might face. This unit will provide students with different security scenarios they will need to solve and learn from. Finally they will extrapolate what they learned to a small personally made manual guide on digital citizenship. This guide will help them share with their community the ways to address security digital scenarios in the future.

**Standards (NGSS, CCSS, CTE):**

Digital Citizenship Standard 2.B

Students

Students practice and encourage others in safe, legal and ethical behavior when using technology and interacting online, with guidance from an educator

**Soft Skills:**

Students are developing virtual citizenship skills such as appropriate use of technology, ethical technology use, digital riquette, modern rules applied to digital content information such as copyright laws, plagearism...

**Locally and/or Personally Relevant for Students:**

**Students are working virtually nowadays and students with less knowledge of technology could fall pray to predators more easier than their more tech savvy peers**

How do students build on their understanding of their school community or on what matters to students? Are there ways to make a strong connection to women or underrepresented minorities in STEM fields – to increase proportionate representation of those groups in STEM?

**Connections to career and educational pathways:**

**In an industry world it is important to know how to be civil in a virtual world. It is really important that we are being productive. Good citizens as we are working online and even in our everyday worlds and environments. Kids who develop techniques to use online also receive a great advantage for the future business world.**

**Businesses nowadays are very dependent on digital interactions. understanding cyber security is very beneficial when hiring processes happen. Because one incident could be really impactful to a company.**

**Protecting digital assets become a priority, so it is important for students to feel empowered and know how to apply digital citizenship to their everyday lives.**

**Incident response teams**

How will students learn about connections to career and educational pathways into the unit?

**Lesson 1.1 Privacy and Security**

**Target Grade Level(s): 3-5**

**Subject(s): Technology/ STEM**

**Author(s): Goodwin**

**Problem Statement: How do you empower yourself so that can you navigate the virtual world safely and securely?**

**Unit Overview and Table of Contents**

**1. Explain the difference between private and personal information**

**2. Explain why it is risky to share private information online**

**3. Explain how privacy and security are connected**

**4. Explain why privacy and security are important for the workplace**

**Standards (NGSS, CCSS, CTE):**

SSS4.4.1 Draw clear, well-reasoned conclusions with explanations that are supported by print and non-print texts in a paper or presentation. **(**[**https://www.k12.wa.us/sites/default/files/public/socialstudies/standards/SS%20Standards%202019\_Grades%20K-5\_SS%20Skills.pdf**](https://www.k12.wa.us/sites/default/files/public/socialstudies/standards/SS%20Standards%202019_Grades%20K-5_SS%20Skills.pdf)**)**

**Soft Skills:**

**• Developing positive relationships**

**• Demonstrating cultural competency**

**• Practicing teamwork and collaborative**

**problem-solving**

**• Resolving conflicts constructively**

**• Resisting negative social pressure**

**• Showing leadership in groups**

**• Seeking or offering support and help**

**when needed**

**• Standing up for the rights of others**

**Communicating effectively**

[**https://www.k12.wa.us/sites/default/files/public/studentsupport/sel/pubdocs/Standards%2C%20Benchmarks%20Indicators%20-%20creative%20commons.pdf**](https://www.k12.wa.us/sites/default/files/public/studentsupport/sel/pubdocs/Standards%2C%20Benchmarks%20Indicators%20-%20creative%20commons.pdf)

**Locally and/or Personally Relevant for Students:**

Since we have transitioned to a remote setting, we are completing more activities online, thereby increasing student exposure to a variety of sources and resources. Consequently, this transition also makes them more vulnerable to deception and viral attacks.

**Connections to career and educational pathways:**

Businesses nowadays are very dependent on digital interactions, in the form of either correspondences, services, or even social media platforms. Thus, the ability to understand cyber security is very beneficial not only during the hiring processes but in order to ensure the protection and safeguard of important fiscal, employee, or even human resource information.

Consequently, young students learn to work in a collaborative manner and problem-solve when necessary, since they are not always afforded the opportunity to work on those soft skills outside of a traditional learning environment. By helping students become “Digital Citizens”, they are able to efficiently, ethically, and socially interact on a digital platform, while simultaneously developing the soft skills needed to navigate the cyberworld on a broader spectrum. As a result, this problem-based learning project will provide students the ability to collaborate, creative pathways, and problem solving, thereby equipping them with the basic skills needed for future success in any career industry.

**How will students learn about connections to career and educational pathways during the unit?**

Students will learn how privacy and security is utilized within the workforce.

**Materials:**

Computer/ Laptop

Internet accessibility

Privacy and Security PowerPoint

**Lesson preparation:**

**Time required:**

49 minutes (Total)

* All lesson materials are included on the Privacy and Security PowerPoint, with the exception of the summative assessment.

**Formative Assessment: Formative Assessment** questions and discussion imbedded throughout the lesson

**Summative Assessment:** visual aids to be presented the next day, which demonstrate understanding of safely navigating the cyber world.

**Grouping of students for instruction:**

* Setting: TEAMS Platform during synchronous instruction.
* Students have limited access to chat box due to recent instances of inappropriate use of chat box and language not fitting of a classroom setting.
* Students are fourth graders ages 9-10.
* Students have not received formal training on recognizing cyberbullying although have background knowledge on identifying and stopping bullying in a normal classroom setting.

**What is the instruction? Consider the PBL procedure that is being addressed here:**

**Understanding the Problem**

|  |  |
| --- | --- |
| **Teacher** | **Student** |
| Teacher brings up Privacy and Security Powerpoint. On slide 2, the lesson starts with discussing the “Essential Question” with students. **(5 minutes)**  On slide 3, the teacher reviews Learning Objectives with the class. **(2 minutes)**  On slide 4, the teacher begins the “Warm Up, Stand Up, and Sit Down” Activity. **(5 minutes)**  On slide 6, the teacher introduces the “Class Discussion: Why do people Share” by discussing the subsets. **(3 minutes)**  On slide 7, the teacher plays the “Private and Personal Information Video” **(1 minute, 30 seconds)** | Student reads the question silently, then jots down a few possible responses before sharing with the class.  Students quietly listen  Students either raise their hand or keep it down depending on the question being asked.  Students quietly listen  Students watch the video and take notes if they want |
| On slide 8, the teacher views pertinent vocabulary with the students. **(2 minutes)** | Students listen and ask clarifying questions if needed. |
| Teacher reviews the next activity on slide 9. The slide says handout, but both questions are reproduced on slide 10 to accommodate for remote learning. **(5 minutes)**  The terms Privacy and Security are reinforced by the teacher on slide 11. **(1 minute)** | Students take turns answering the questions verbally or write their responses in the chat.  Students quietly listen |
| On Slides 12 and 13, the teacher discusses why privacy and security are important. On both slides a scenario is introduced and students are expected to share out. The teacher may chime in if students are slow to respond or unsure. **( 8 minutes/ 4 minutes for each slide)** | Students take turns answering the question verbally or write their responses in the chat. |
| On slide 14, the teacher discusses the correlation between privacy and security. **(3 minutes)** | Students listen and ask clarifying questions if needed. |
| On slide 15, the teacher revisits the essential question, but in kid-friendly language. **(1 minute)**  The last 3 slides are formative assessment questions. The teacher asks the students those questions and then discusses the answers afterwards. **(12 minutes/ 4 minutes each slide)**  Once the PowerPoint is completed, students will work on the summative assessment. The summative assessment requires students to produce a visual aid (poster, flyer, picture, PowerPoint, word document etc) at home and then show it to the class the following day. The visual aid should answer the essential question presented on slide 15. **(15 minutes)** | Students quietly listen  Students take turns answering the question verbally or write their responses in the chat.  Students go home and produce a visual work, which they can present to the class the following day. |

**Accommodations:** Students will be provided with extra time to answer the formative assessment questions or paraeducator support if needed.

**Extensions:** Industry experts will serve as guest speakers in the class. They will share their personal experiences with safely navigating the cyberworld in a professional setting and then they will discuss how what the students are learning now will help them to be successful in their career pathway in the future. **Assessments:**

* **Formative:** Discussion

Students Questions

* **Summative:**Visual Aid produced by the student, which demonstrates the ways in which students could make good decisions online.

**References/Resources:**

* Privacy and Security Presentation

**Hey Buddy, What’s your password?**

Target Grade Level(s): Intermediate grades 3-6th

Subject(s): Digital Citizenship, Cybersecurity, SEL

Author(s):Nicki Vannatter

**Problem Statement:How do you empower yourself so that can you navigate the virtual world safely and securely**

**Unit Overview and Table of Contents**

In the digital world there are many threats and cyber security scenarios students will need to face. With the world ever changing and open access to students as never before, it has become necessary to empower students with information on how to navigate the challenges they might face. This unit will provide students with different security scenarios they will need to solve and learn from. Finally they will extrapolate what they learned to a small personally made manual guide on digital citizenship. This guide will help them share with their community the ways to address security digital scenarios in the future.

**Standards (NGSS, CCSS, CTE):**

itizenship Standard 2.B

Stude

**OSPI Grades 3-5 technology standards**

**2d. Students demonstrate an understanding of what personal data is, how to keep it private and how it might be shared online.**

**Soft Skills:**

**Communication skills: students will work in small groups to create a strong password, then use those skills practiced to create your own strong password.**

**Creativity: Students will create their own unique to them password based on the tips from the handout, video, and real life scenario as to why it is so important to have such a unique to you password.**

**Locally and/or Personally Relevant for Students:**

**Students are working virtually nowadays and students with less knowledge of technology could fall prey to predators more easier than their more tech savvy peers. Students need to be able to avoid possible situations in which they are hacked, cyberbullied, or a become a victim of a cybercrime.**

**Connections to career and educational pathways:**

**In an industry world it is important to know how to be civil in a virtual world. It is really important that we are being productive. Good citizens as we are working online and even in our everyday worlds and environments. Kids who develop techniques to use online also receive a great advantage for the future business world.**

**Businesses nowadays are very dependent on digital interactions. understanding cyber security is very beneficial when hiring processes happen. Because one incident could be really impactful to a company.**

**Protecting digital assets becomes a priority, so it is important for students to feel empowered and know how to apply digital citizenship to their everyday lives.**

**Incident response teams**

Students will learn that strong password protection is a foundational step in protecting themselves as a digital citizen now as a student, and in the future as members of the workforce and society.

Lesson Standards

SSS1 Use critical reasoning to analyze and evaluate claims

SSS2 Use inquiry based research

Educational Technology Standards Grades 3-5 (OSPI)

2b, 2d

**Materials: hybrid/in-person:pencil, handout, teacher powerpoint**

**remote learning: digital handout, stylus teacher powerpoint**

**Lesson preparation: Complete lesson 1 prior**

**Time required: 20 minutes**

**Grouping of students for instruction:**

If possible randomize groups for breakouts. I would place a tech savvy person in each breakout group that would be able to navigate the handout, and help those that may need it.

**What is the instruction? Consider the PBL procedure that is being addressed here:** We are building on creating strong cybercitizens and engaging students to understand the importance of cybersecurity. In this lesson, we are focusing on the first line of that: password protection.

**Understanding the Problem**

|  |  |
| --- | --- |
| **Teacher** | **Student** |
| Why is it important to have a strong password? Why do we need to protect our passwords? What are the dangers in sharing passwords? | Students will find the answers to these questions |
| Facilitating a discussion in groups and whole class | Brainstorming what they already know and what they need to know about this problem… |

**Accommodations:** I would have groupings in which there are ELL, students with IEP’s, HICap students, tech savvy students mixed together. I hope that there will be a mix of kinesthetic learners with visual and auditory learners as well.

**Extensions:** If time allows, students could come up with a way to teach their parents/guardians how to create secure passwords.

**Assessment: A finished password that meets all the criteria set forth in the activity.**

**Lesson 1.3**

**Title:** No Cyberbullies Allowed

Target Grade Level(s):3-5th.

Subject(s): Social Emotional Learning. Cybersecurity.

Author(s): Ana Romero

**Problem statement:** How can we empower young students to prevent, identify, and stop cyberbullying without limiting technologic accessibility?

**Learning objectives: Students will continue their study of different cybertreats which they might be vulnerable while interacting online. On Lesson 1.1, students learned about treats to their cyber security and ways to recognize them, and developed ways to address them. On Lesson 1.2, students learned how to create a solid wall of protection in a cyber environment. Creation of solid and safe passwords. Now on Lesson 1.3, students will have an opportunity to think about different scenarios in which their individual security and that of others could be threatened. By addressing the problem of Cyberbullying, students recognize how to avoid it, protect themselves and others, and communicate their learning with others members of their community.**

**Soft Skills:**

**Communication Skills**. Students will create a poster to communicate information learned on problem solving given a certain scenario (Optionally, due to current educational setting’s limitations, students will create a power point)

**Creativity:** Students need to create a display that effectively communicates information quickly and in the least space and time.

**Digital Citizenship Competencies**

**Inclusive:** I am open to hearing and respectfully recognizing multiple viewpoints, and I engage with others online with respect and empathy.

**Informed:** I evaluate the accuracy, perspective, and validity of digital media and social posts.

**Engaged**: I use technology and digital channels for civic engagement, to solve problems and be a force for good in both physical and virtual communities.

**Balanced: I** make informed decisions about how to prioritize my time and activities online and off

**Alert:** I am aware of my online actions and know how to be safe and create safe spaces for others online.

**Lesson standards (NGSS, CCSS, CTE):**

**Washington State K–12 Learning Standards for Social Studies**

The State K–12 Learning Standards for Social Studies are an essential part of the framework supporting Washington’s learning goals, in accordance with which, every student will be able to…

3. Think analytically, logically, and creatively, and to integrate technology literacy and fluency

as well as different experiences and knowledge to form reasoned judgments and solve

problems.

4. Understand the importance of work and finance and how performance, effort, and

decisions directly affect future career and educational opportunities.

C4.1.1 Identify that citizenship and civic involvement in

the neighborhood and school community are the rights

and responsibilities of individuals.

C4.2.2 Explain, give examples, and demonstrate ways to

show good citizenship at school and in the community.

E1.3.1 Identify the costs and benefits of individual choices.

E1.3.2 Identify positive and negative incentives that influence the decisions people make.

**Tacoma Public Schools’ Social Emotional Learning (ESL) Framework Responsible Decision Making:**

**Relationship Skills. -** The abilities to establish and maintain healthy and supportive relationships and to effectively navigate settings with diverse individuals and groups. This includes the capacities to communicate clearly, listen actively, cooperate, work collaboratively to problem solve and negotiate conflict constructively, navigate settings with differing social and cultural demands and opportunities, provide

leadership, and seek or offer help when needed. Such as:

• Communicating effectively

• Developing positive relationships

• Demonstrating cultural competency

• Practicing teamwork and collaborative problem-solving

• Resolving conflicts constructively

• Resisting negative social pressure

• Showing leadership in groups

• Seeking or offering support and help when needed

• Standing up for the rights of others

https://hub.tacoma.k12.wa.us/ci/sel/Documents/SELBenchmarks.pdf

https://casel.org/sel-framework/

Resources:

<https://www.k12.wa.us/sites>

**Locally and/or personally relevant for students:**

During this year, while teaching virtually, it came to my attention that a few of my students where having a hard time communicating in the chat box and negative interactions where happening on occasions. We often talk about preventing and recognizing bullying during in person instruction but, the current pandemic has created a void in which instances of negative interactions are occurring and not being addressed. An open chat box and blind spots created by online instruction make the need for a mini lesson on recognizing and preventing cyberbullying a priority.

According to the UNICEF the effects of cyberbullying in young children are:

Mental. - Feeling upset, embarrassed, stupid, and angry.

Emotional. - Feeling ashamed or losing interest in the things you love.

Physical. -Tired (loss of sleep), stomachaches, and headaches.

Students who suffer from cyberbullying or who are cyberbullies themselves cannot properly learn and grow as healthy individuals. These reasons make this lesson relevant and necessary for my students and other young students across our district.

**Connections to career and educational pathways:**

Young students learn to work in collaborative teams and solve problems. Oftentimes they are not given the opportunity to work on the soft skills necessary for future career success. Collaboration, creative pathways, and problem solving are basic skills for a future successful career in any industry.

In the elementary years we provide the basics of curricular educational needs and also emotional support, as well as problem-solving skills. How to take a problem, learn about it, and empathize with the subjects of your research are skills necessary for students to be successful career driven individuals. Helping students become Digital Citizens, individuals who effectively, ethically, and positively interact in the internet, is an invaluable skill we need to teach our young students.

This problem-based project will also give students the ability to work on this process as a team. As a society we believe in codes of conduct and agreed upon behavior in order to protect teach other an thrive. I believe given the chance, students will believe, and live it too.

**Materials:**

Computer

Paper, Color Pencils, Note taking tools

Power Point and internet accessibility

Presentation Power Point (Teacher)

**Lesson preparation:**

**Time required:**

40 minutes (Total)

* 10 minutes video presentations and question
* 10 minutes talk about the problem, present the question
* Students take notes and are given the assignment
* 10 minutes relevant questions and final directions
* Homework time.
* 20 minutes next day presentations.

**Formative Assessment:** Questions and Discussion

**Summative Assessment:** posters or power point presentations as homework to be presented the next day.

**Grouping of students for instruction:**

* Setting: TEAMS Platform
* Synchronous instruction. Approximately 20 students at a time.
* Students have limited access to chat box due to recent instances of inappropriate use of chat box and language not fitting of a classroom setting.
* Students are third graders ages 9-10.
* Many students share small spaces with other siblings
* Students have not received formal training on recognizing cyberbullying although have background knowledge on identifying and stopping bullying on a normal classroom setting.

**What is the instruction? Consider the PBL procedure that is being addressed here:**

**Understanding the Problem**

|  |  |
| --- | --- |
| **Teacher** | **Student** |
| Teacher introduces a video to students. No previews presentation needed. Students need to only watch the video and are instructed to save questions or comments for the end.  Introducing the problem launch using a video. Providing resources that give background and meaning to the problem through the following sites…  Students will be asked to not mention names and only try to comment on actions, out of respect of others, part of the learning for this lesson. | Students watch the video and take notes.  Students will fill up a note taking chart with the following questions:  What do you think about the characters in the vide?  What would you have done if you were in their place?  If you could, what would you do to help others recognize and prevent bullying? |
| After taking notes teacher presents students with an idea. Given the tools to help others prevent cyberbullying would they be on board to help the school begin an anti-cyberbullying campaign? | Students are given the opportunity to express interest and ask questions |
| After allowing students to interchange ideas, online in this case, the teacher informs students that a quick power point with advice on quick ways to inform others about preventing cyberbullying is the first step on helping others. Informing yourself is the first step to help others. Teacher ask students to get their notebooks and pencil. They will take notes on the most important points they want to pass on to others. Teacher informs students they will be making a poster or power point with quick information for others as a quick way to stop and prevent cyberbullying | Students take out notebook and are presented with a quick example of requirements for the poster. |
| Teacher creates a quick poster as an example (a few of my students at this stage need a lot of support on getting started with new tasks) | Students are given time to take quick notes on what they will need to complete. |
| Teacher shows power point and allows students to take quick notes to prepare for their own poster or power point. | Students take notes and prepare for their work |
| Teacher lets students know they will present their work tomorrow | Students work on their poster or power point presentation for the next day. |

**Accommodations:** Student will be provided with an example in case they need a bit more support and feeling secure about their own work. Some of my students do not have access to the necessary tools for a poster, these students will be given the choice of using a power point.

**Extensions:** Once we go in the school building, the posters, if that is the choice students took, will be hanged around the school. Perhaps as the year progresses, we will be allowed to pursue our campaign to educate others in our school about cybersecurity and protecting ourselves and each other online.

**Assessment:**

**Formative:** Discussion

Students Questions

Table with questions and answers

**Summative:** Posters and other types of media created by students

**References/Resources:**

Resources:

https://www.pacer.org/bullying

https://hub.tacoma.k12.wa.us/ci/sel/Documents/SELBenchmarks.pdf

https://casel.org/sel-framework/

http://www.corestandards.org/ELA-Literacy/RL/3/

<https://www.k12.wa.us/sites/default/files/public/socialstudies/standards/OSPI_SocStudies_Standards_2019.pdf>