

UNIT 4: Cybersecurity Is Global

Estimated Time in Hours: 7

<p><u>Big Idea(s)</u> 8 Implications 1 Ethics</p>	<p><u>Enduring Understandings</u> 8.2, 1.1</p>	<p><u>Projects & Major Assignments</u> - Learn how the Internet has evolved and how it impacts today's society. - Research things that impact cybersecurity.</p>
<p>Guiding Questions:</p> <ul style="list-style-type: none"> • What was life like before the Internet? • How did cyber become global? • How is cybersecurity global? What are the challenges associated with this? • What are the side-effects of a global and open Internet? • How do different countries address what citizens do on the Internet? • How is Internet crime handled in the U.S.? • How do different people view technology? • How does technology impact social groups? • Who owns a person's data? • Who is responsible for cybersecurity? 		
<p>Learning Objectives & Respective Essential Knowledge Statements</p>	<p>Materials</p>	<p>Instructional Activities and Classroom Assessments</p>
<p>8.1.2 LO: Students will explain how the idea of the open internet led us to new innovations that impact our daily lives and our security.</p>	<ul style="list-style-type: none"> • Computer, lecture slides, projector, graphic organizers, access to Internet • "What did we do before the Internet again?" <i>SEO for Breakfast</i>, 22 July 2018, https://www.seoforbreaakfast.com/what-did- 	<ul style="list-style-type: none"> • Have students answer the following questions: How did people buy things? How did people communicate? How did people find out what was happening in the world? • Have students map the following things to their modern equivalent. A library, a shopping center, a movie theatre, a book store, etc. • Encourage students to make up their own equivalent. Use the "What did we do before the Internet again?" image (linked left) for reference.

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	<p>we-do-before-the-internet/</p>	
<p>8.1.2a EK: The Internet provides global connectivity and is not structured around national boundaries.</p>	<ul style="list-style-type: none"> • “How the Internet Was Invented The History of the Internet, Part 1.” <i>YouTube</i>, uploaded by SciShow, 1 Mar 2017, https://www.youtube.com/watch?v=1UStbvRnwmQ&feature=emb_logo 	<ul style="list-style-type: none"> • Explain to students that the Internet started with a handful of research facilities on the west coast. Ask them how far the Internet reaches today. How did this happen? • Have students watch the video to see if their answers are correct.
<p>8.1.2 LO: Students will explain how the idea of the open internet led us to new innovations that impact our daily lives and our security.</p>	<ul style="list-style-type: none"> • <i>Internet Archive: Wayback Machine</i>. Internet Archive, https://archive.org/web/ • Tucker, Catlin. “Internet Archive: Go Back in Time with the Wayback Machine.” <i>CatlinTucker.com</i>, 7 Jan 2019, https://catlintucker.com/2019/01/internet-archive-go-back-in-time-with-the-wayback-machine/ 	<ul style="list-style-type: none"> • Have students list ways the Internet has changed. Show them the Wayback Machine. • As described on the site linked on the left, have students research how the Internet has changed. Try to find the date of when a site was defaced. Have them look at the site before the defacement, the day it took place, and the days after. Have them look for news articles about the attack to examine the impact on the site and its users.
<p>8.2 EU: Cybersecurity is global, transcending traditional</p>	<ul style="list-style-type: none"> • “Top 20 Countries in Internet Users.” <i>Internet</i> 	<ul style="list-style-type: none"> • Using the Internet World Stats site, have students explore the current state of the Internet.

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<p>boundaries, and is always evolving.</p>	<p><i>World Stats</i>, 30 June 2019, https://www.internetworldstats.com/top20.htm</p> <ul style="list-style-type: none"> • “Individuals using the Internet (% of population).” <i>The World Bank</i>, https://data.worldbank.org/indicator/it.net.us.er.zs?end=2018&start=1960&view=chart 	<ul style="list-style-type: none"> • Using the World Bank site linked to the left, have students check on the different types of graphs (line, bar, and map) to analyze Internet growth over the years. This could be done for individual countries, by decade, or by subscription type (cellular, telephone, broadband, etc.)
<p>8.2.1c EK: Past and current laws are insufficient to assign blame for taking action that make our systems more vulnerable or to punish an entity for cyber crimes.</p> <p>8.2.1a EK: Nation states have various approaches to sovereignty, investment and deterrence regarding cyber technology.</p> <p>8.2.2a EK: Nation states have various approaches to civil rights and privacy regarding cyber technology.</p>	<ul style="list-style-type: none"> • “Top 20 Countries Found to Have the Most Cybercrime.” <i>EnigmaSoft</i>, https://www.enigmasoftware.com/top-20-countries-the-most-cybercrime/ • Morgan, Steve. “2019 Cybersecurity Almanac: 100 Facts, Figures, Predictions And Statistics.” <i>Cybercrime Magazine</i>, 6 Feb 2019, https://cybersecurityventures.com/cybersecurity-almanac-2019/ 	<ul style="list-style-type: none"> • Ask students if Internet crime follows national boundaries. Have students examine the two sites to see how nations are impacted by cybercrime. • Ask students why some nations care about cybersecurity more than others. • Have them use the Global Cybersecurity Index linked on the left to see how different nations rank in their efforts.

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<p>8.2.1g EK: Cultural perceptions and priorities of security may differ between countries affecting how and which security measures are implemented.</p>	<ul style="list-style-type: none"> • “Global Cybersecurity Index (GCI) 2018.” <i>International Telecommunication Union (ITU)</i>, https://www.itu.int/dms_pub/itu-d/opb/str/D-STR-GCI.01-2018-PDF-E.pdf 	
<p>8.2.1b EK: Cybersecurity is impacted by the state of a political alliance between nation states.</p> <p>1.1.1d EK: Different communities and societies have different foundational social goals and values that impact their behaviors concerning technology.</p>	<ul style="list-style-type: none"> • “Joint US - UK statement on malicious cyber activity carried out by Russian government.” <i>National Cyber Security Centre (NCSC)</i>, 15 April 2018, https://www.ncsc.gov.uk/news/joint-us-uk-statement-malicious-cyber-activity-carried-out-russian-government 	<ul style="list-style-type: none"> • Discuss this point, providing students with the example of the how the US and UK issued a joint statement regarding Russia in 2018. See link to the left for more information.
<p>8.2.2c EK: When a government provides cybersecurity it can often lead to the reduction of privacy.</p> <p>8.2.1a EK: Nation states have various approaches to sovereignty, investment and</p>	<ul style="list-style-type: none"> • Pattison, Sandra. “Internet Censorship 2020: Find Out Where Repression Reigns.” <i>Cloudwards.net</i>, 12 June 2020, https://www.cloudwards.net/internet-censorship/ 	<ul style="list-style-type: none"> • The site cloudwards.net (see left) offers a great deal of information on this point. This would be a good research opportunity for students. They could research by restriction or by assigned country. • This is a good place to discuss how the FBI investigates cybercrime in the United States. The FBI’s IC3 site, linked to the left, offers various flyers and brochures about their efforts. It also includes statistics about victims, including

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<p>deterrence regarding cyber technology.</p> <p>8.2.2a EK: Nation states have various approaches to civil rights and privacy regarding cyber technology.</p> <p>1.1.1d EK: Different communities and societies have different foundational social goals and values that impact their behaviors concerning technology.</p>	<ul style="list-style-type: none"> • <i>Federal Bureau of Investigation Internet Crime Complaint Center (IC3)</i>. Federal Bureau of Investigation, https://www.ic3.gov/complaint/default.aspx/. 	<p>number and dollars lost per age group. These statistics are helpful in exploring how different groups vary in their behaviors concerning technology.</p>
<p>1.1.1a: Societies are groups of individuals characterized by common interests/values that are perpetuated by persistent social interaction.</p> <p>1.1 EU: Social goals reflect the foundational values held by society; these core societal values are reflected in cybersecurity choices.</p> <p>1.1.1d EK: Different communities and societies have different foundational social goals and values that impact their behaviors concerning technology.</p>	<ul style="list-style-type: none"> • “Cybersecurity and Human Rights.” <i>PublicKnowledge.org</i>, https://www.publicknowledge.org/cybersecurity-and-human-rights/ • “The State of Cybersecurity in Latin America.” <i>Trend Labs Security Intelligence Blog</i>, Trend Micro, 3 May 2013, https://blog.trendmicro.com/trendlabs-security-intelligence/the-state-of-cybersecurity-in-latin-america/ 	<ul style="list-style-type: none"> • Both Latin American and Nigerian attitudes about cybercrime are different than our society. The links on the left touch on these differences. Use a Venn diagram to help students illustrate how the attitudes vary. • Another avenue of investigation is how technology has impacted individuals with disabilities. • Students should also discuss the impact of technology and cybersecurity on politics, business, socialization, productivity, and privacy.

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<p>8.2.1g EK: Cultural perceptions and priorities of security may differ between countries affecting how and which security measures are implemented.</p>	<ul style="list-style-type: none"> • “Letter from Africa: Why Nigeria’s internet scammers are ‘role models.” <i>BBC.com</i>, 23 Sept 2019, https://www.bbc.com/news/world-africa-49759392 • “Mothers of ‘Yahoo Boys’ Now Forming Association.” <i>Sahara Reporters</i>, 31 Oct 2019, http://saharareporters.com/2019/10/31/just-mothers-%E2%80%98yahoo-boys%E2%80%99-now-forming-association-%E2%80%93magu 	
<p>8.2.2 LO: Students will analyze how privacy concerns vary greatly in regards to societies, age, and socio-economic status.</p> <p>1.1.1 LO: Students will analyze online and offline behaviors in societies, i.e., themselves, peers, families, communities, and</p>	<ul style="list-style-type: none"> • “Digital Knowledge Quiz.” Pew Research Center, <i>pewresearch.org</i>, https://www.pewresearch.org/internet/quiz/digital-knowledge-quiz/ • Birdsong, Toni. “15 Easy, Effective Ways to Start Winning Back Your Online 	<ul style="list-style-type: none"> • Have students take the digital knowledge quiz linked on the left. When finished, have students compare their score with other Americans who took the quiz. • Have students make a community service poster discussing various ways to protect their privacy. The linked McAfee article is a good resource for this activity. • Poll students about their Facebook use. Show them the Facebook graphic linked on the left.

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<p>countries, and deduce the values that govern these behaviors.</p>	<p>Privacy.” <i>McAfee.com</i>, 12 Oct 2019, https://securingtomorrow.mcafee.com/consumer/family-safety/15-easy-effective-ways-to-start-winning-back-your-online-privacy/</p> <ul style="list-style-type: none">• “Since 2012, use of Facebook has grown fastest among older generations.” Pew Research Center, <i>PewResearch.org</i>, 6 Sept 2019, https://www.pewresearch.org/fact-tank/2019/09/09/us-generations-technology-use/ft 19-09-03 digitaldividegenerations_2/• Vogels, Emily A. “Millennials stand out for their technology use, but older generations also embrace digital life.” Pew Research Institute,	<ul style="list-style-type: none">• Next, have them poll people from each generation listed regarding their use of Facebook, a smartphone, a tablet, and use of social media to see if their research matches the ones linked on the left.
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	<p><i>PewResearch.org</i>, 9 Sept 2019, https://www.pewresearch.org/fact-tank/2019/09/09/us-generations-technology-use/</p>	
<p>1.1.1c EK: Values concerning how to engage in cyber technologies can and do compete during the creative process of designing the technology and its adoption.</p> <p>1.1.1b EK: Cybersecurity ethics is an expression of values by the designers and users.</p> <p>8.2.1e EK: Depending on the values of the entity, some will invest in research and development, while others invest in reverse engineering the work of others.</p> <p>8.2.1d EK: To ensure the safety of a nation’s critical infrastructure both public and private sectors are responsible for cybersecurity.</p>		<ul style="list-style-type: none"> • Discuss 1.1.1b EK and 1.1.1c EK with students. Explain that each person has two types of data (public and private). Companies often demand individuals divulge a lot of their private data. Should companies have to protect this data? Have students read an app usage agreement to see how much private data the app has access to. • Digital/voice assistants like Google Home and Alexa are excellent products to use to study these points. • Discuss the differences between R&D and reverse engineering. What are the pros and cons of both? In what situations is reverse engineering illegal. • Explore how ransomware has hit businesses, hospitals, schools, and cities. How were people impacted?
<p>8.2.1f EK: Citizens in cyber space can more readily form ideological communities which is impacting</p>		<ul style="list-style-type: none"> • Ask students if they have connections online with people they have never met. Have they ever watched a video made

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<p>what it means to be a nation state.</p> <p>8.2.2b EK: The combination of increasing power of new technology and the declining clarity and agreement on cybersecurity and privacy gives rise to problems concerning law, policy and ethics.</p> <p>8.2.2c EK: When a government provides cybersecurity it can often lead to the reduction of privacy.</p>		<p>a someone in a different country? Note the benefits of global connectivity (information sharing, communication, bank and shopping, selling and making money, IoT devices, sharing resources/cloud computing, entertainment, etc.). Does this impact how we see the world.</p> <ul style="list-style-type: none"> • This connectivity also brings about challenges (bullying, crime, addiction/time loss, spam, health and mental issues, loss of national identity, loss of privacy, etc.). Have students list the pros and cons. • Discuss the deep web and dark web. How does the dark web impact law and ethics?
<p>8.1.1h EK: Cybersecurity events have led to the development of various cybersecurity career paths and various needs in order to prepare people for these new types of jobs.</p>		<ul style="list-style-type: none"> • Discuss a career related to these topics (digital forensics, privacy officer, or compliance manager)