Activity 3.1.3 - Big Data Computational Innovations

**Part 1**

Create a video or visual artifact (infographic) that illustrates, represents, or explains the computing innovation's purpose, function, or effect. (3 page/1 minute/30MB max)

**Part 2**

1. Name the innovation and its purpose and function. Describe how your artifact illustrates, represents, or explains the computing innovation's purpose, function, or effect. (Approximately 100 words)

The innovation I chose was the drone. A drone is an unmanned aircraft that can be navigated through a controller. Because it can be used without actually seeing the aircraft, drones have an endless possibilities of uses. The artifact i created illustrates and explains two uses of a drone. The most popular use is photography and video. I included several pictures taken by drones to show the possibile images it can capture. Another use of a drone is to ensure safety. Through the drone’s camera security can be at two places at once to make sure the crowd is safe. The drone above a party shows how the aircraft can be an eye in the sky.

1. Describe the tools, technique, and process you used to produce the artifact. Your description must be detailed enough so that a person unfamiliar with those tools and techniques will understand the process. (Approximately 100 words)

To create my artifact, I used the website canva.com. Canva allows people with no graphic-design background or skill easily create designs. The website provides many templates: however, decided to create my poster from scratch. After choosing my color scheme, I began to upload images of drones, safety signs,and panoramics. Using their easy drag and drop allowed me to place my images anywhere on the page. After I placed the images in the correct places, I added the text in. I clicked the text box on the side of website and inserted the drone statistics and description of its functions. The drone facts and statistics I found through my research of drones. I made some final touches when I moved around some text, but when clicking on the full-screen button, I realized my artifact was complete.

1. Explain the beneficial AND harmful effect(s) the innovation has or could have on society, economy, or culture. (Approximately 250 words)

Because you can control a drone from miles away, one beneficial effect is using the drone for search and security. Security officers can not see everything because they only have two eyes, but the camera on the drone allows the officers to have an eye in the sky. For example, when watching a big crowd, even with 7,000 police officers, they still needed help having visual on approximately 100,000 people. The drone in the sky would help keep thousands of people safe as they can see everything happening down below. Drones would allow society to be safer and much more efficient in time. Although drones can protect people in potentially dangerous situations, it can also be harmful. There are specific rules and laws that drones need to obey, for example, a drone can not fly near airports. However, humans choose to ignore rules sometimes. Hundreds flights can be cancelled when a drone gets near airports and airplanes. This will not only cost the airport a loss in millions of dollars but also creates a potentially dangerous situation. If a drone gets too close to a plane and gets caught into an aircraft’s engines, it could result in the aircraft’s crash. This little device could result in a devastating amount of deaths. Drones become hazardous and a risk to others. It causes society to question those who own drones because they can harm other people. The intention of creating the unmanned aircraft was not to hurt or disturb others in any way.

1. Describe the data; the consumption, production, or transformation of data; and the storage, privacy, or security concern(s) directly related to the innovation. (Approximately 250 words)

Data produced by drones can be collected by the company who created and sells the drone and/or the drone owner. They can collect the gps data that will show coordinates and panoramic overview images as to where and how far the drone has travelled and the video/images that is captured through the drone’s camera. Drone companies also install the gps signal in order to know if you are in an area that permits drone flight and activity. The drone takes in the specific location coordinates and implements them into their map. If you are in a restricted area the drone will send a message to your device and not allow flight there. Drone data is stored either through the cloud or through sd cards. The cloud allows both you and the company to see the information, while the sd card is more convenient and only to the user. There are some privacy/ security concerns with the use of drones. One concern is with the images/video the drone captures. It can invade people’s privacy. A drone could easily fly over the fence or the wall that blocks a person from seeing your neighbor’s house. If the drone has a camera and is recording, it becomes an invasion of privacy and can make people unsafe in their own home. Another concern is that the company that produced the drone can be gathering information about where you fly your drone.

1. Use APA-style citations to correctly reference at least three articles you used to develop your artifact.

Hern, A., & Topham, G. (2018, December 20). How dangerous are drones to aircraft? Retrieved from <https://www.theguardian.com/technology/2018/dec/20/how-dangerous-are-drones-to-aircraft>

NYPD drone to oversee Times Square for New Year's Eve. (2018, December 30). Retrieved from <https://www.policeone.com/police-products/Police-Drones/articles/482503006-NYPD-drone-to-oversee-Times-Square-for-New-Years-Eve/>

Corrigan, F. (2019, January 07). How Do Drones Work And What Is Drone Technology. Retrieved from <https://www.dronezon.com/learn-about-drones-quadcopters/what-is-drone-technology-or-how-does-drone-technology-work/>

**Scoring Rubric:**

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| --- | --- | --- | --- | --- | --- |
| **Standard** | **4** | **3** | **2** | **1** | **0** |
| **9-12.DA.10 Visualizations** | Student creates an artifact that clearly identifies the computing innovation and provides an illustration, representation or explanation of the computing innovation’s intended purpose, function, or effect. Artifact uses primarily images and diagrams with minimal words to convey the innovations purpose, function, or effect. | Student creates an artifact that identifies the computing innovation and provides an illustration, representation or explanation of the computing innovation’s intended purpose, function, or effect. Information is communicated with minimal text. | Student creates an artifact that identifies the computing innovation and provides an illustration, representation or explanation of the computing innovation’s intended purpose, function, or effect. | Student creates an artifact that provides an illustration, representation or explanation, but additional information is needed to understand the purpose, function, or effect of the computational innovation. | No evidence of students ability to create an effective visualization. |
| **9-12.IC.23 Culture** | Student evaluates the beneficial and harmful effects and implications of computing and emerging technologies on larger ethical, social, economic, and cultural practices, citing evidence from at least three credible sources. | Student evaluates the beneficial and harmful effects and implications of computing and emerging technologies on larger ethical, social, economic, and cultural practices, citing evidence from at least 2 credible sources. | Student evaluates the beneficial or harmful effects and implications of computing and emerging technologies on larger ethical, social, economic, and cultural practices, citing evidence from at least one credible source. | Student describes effects of computing and emerging technologies and cites at least one source. | No evidence of students ability to identify effects of computing on social, economic, or cultural practices. |
| **9-12.IC.28-30 Safety, Law, and Ethics** | Student clearly identifies the data used by the computational innovation and explains the storage, privacy, or security concerns related to the collection, generation, or processing of data through automated systems. | Student identifies the data used by the computational innovation and explains the storage, privacy, or security concerns related to the collection, generation, or processing of data through automated systems. | Student identifies data used by the computational innovation and provides a general storage, privacy, or security concerns related the use of data. | Student identifies data collection devices used by the computational innovation. | No evidence of student’s ability to identify data and its effect on storage, privacy, or security. |

**Scoring Notes:**

* Beneficial and/or harmful effects are contextual and interpretive; identification includes both the classification of the effect as beneficial or harmful and justification for that classification.
* Effects need to be related to society, economy, or culture. Groups or multiple individuals can be used to represent society. Examples of effects include but are not limited to:
  + The innovation and impact of social media online access varies in different countries and in different socioeconomic groups (EK 7.4.1A)
  + Mobile, wireless, and networked computing have an impact on innovation throughout the world (EK 7.4.1B)
  + The global distribution of computing resources raises issues of equity, access and power (EK 7.4.1C)
  + Groups and individuals are affected by the “digital divide” (EK 7.4.1D)
  + Networks and infrastructure are supported by both commercial and governmental initiatives (EK 7.4.1E)
* Data types include: integers, numbers, Booleans, text, image, video, audio, signals. Data that infer these types like fingerprints, temperature, music, length, pictures, etc. are allowed.
* Data collection devices (e.g. sensors, cameras, etc.) are not data.
* Large data sets include data such as transactions, measurements, texts, sounds, images, and videos. (EK 3.2.2A)