Outline:

Use selected on-line articles to explore current issues related to crypto currencies such as BitCoin. A focus for learning is: the underlying technologies, impacts on society, and impacts on the environment.

Objectives:

* C1.4 describe how electronic access to information influences our everyday lives.
* C2.1 describe the negative effects of computers and computer use on the environment.
* C3.1 describe legal and ethical issues related to the use of computers.

**Level 1: Cryptocurrencies & Blockchains**

Read the following resources before answering the questions below:

* <https://www.investopedia.com/tech/most-important-cryptocurrencies-other-than-bitcoin/>
* <https://www.investopedia.com/terms/b/blockchain.asp>
* <https://www.cryptoandgamers.com/>

1. What is a “cryptocurrency” and how are “cryptocurrencies” different from traditional currencies (money)?

A cryptocurrency is a virtual or digital money which takes form as tokens or coins. There is some cryptocurrencies which have travelled to the real world with credit cards or many other kinds of projects. It’s a digital or virtual currency that uses cryptography for security. All sorts of cryptocurrencies are very difficult to counterfeit due to the cryptography security features. Many cryptocurrencies are decentralized systems based on blockchain technology.

1. Bitcoin is the leading cryptocurrency that most people know. What are some other cryptocurrencies and what are their unique features?

Other cryptocurrencies other than Bitcoin can namely be; Ethereum, Litecoin, Dash, Ripple, Monero, Z cash, Bitcoin cash, NEO, Cardano and EOS.

Litecoin- Litecoin is very similar to Bitcoin but has a much faster block generation rate and offers a faster transaction confirmation.

Ethereum- Ethereum is a decentralized kind of software that is built and can run without any kind of downtime, fraud, control or interference from any sort of third party applications. Developers could use this software to run and develop any kind of application. Investors could also make many kinds of purchases on the site.

Dash- A secretive version of bitcoin. Offers individuals to go “incognito” to make transactions almost untraceable.

Ripple- real-time global settlement network that offers instant and low cost international payments. Ripple’s structure does not require any mining to gather currency.

Monero- Untraceable and private currency.

Z cash- An open-source cryptocurrency in which offers privacy and selective transparency of transactions. Zcash claims that they provide extra security of privacy where all transactions are recorded and published to the blockchain.

Bitcoin Cash- One of the earliest cryptocurrencies and most successful cryptocurriencies.

NEO- A very successful Chinese cryptocurrency which its success help support programming in different languages like Java and C++. Furthermore, NEO has a great relationship with the Chinese government.

Cardano- Cardano is another similar cryptocurrency to Ethereum as the co-owner for Ethereum created Cardano. Cardano offers unique features like smart contacts and Dapps.

EOS- One of the most recent cryptocurrencies to have released, EOS has one of the most longest and most profitable coin offerings of all time.

1. “Blockchains” are the basic technology behind cryptocurrencies and other emerging technologies. Explain blockchains work with respect to:
   1. What they store

They store transaction information on online purchases

* 1. How they work

They store any sorts of data about transactions and hashes on each of the transactions to tell each of them apart.

* 1. How they are secure and private

Blockchains are secure and private due to it having hashes. These hashes are generated by a math function. Blockchains are secure as there are blocks next to these hashes which also contains block’s hash. The block’s hash is very hard to change. However, if the content of the blocks content changes, the hash will also change.

* 1. How they use public and private encryption keys

They use public and private encryption keys by having people being able to send many kinds of notes to the individual. However, to retrieve these notes the person needs a private key to access it. There is no database that keeps track on private keys with blockchain. If the user loses or misplaces their key, they will lose all of their bitcoin wallet.

1. How does Bitcoin use blockchains?

Bitcoin uses blockchains by making a transaction occur and making the transaction become verified. Using blockchain, the job is left up to the network of computers. Bitcoin consists of millions of computer which spread across the globe. Bitcoin also uses it to give the user access to their own transaction data, and about their information. However, you cannot view other users transaction data at all.

1. What are some other real-world applications of blockchains?

Real world applications of blockchain is healthcare, cryptocurrency,banks, property records etc.

1. What are some advantages and disadvantages of blockchains?

Advantages of blockchain is a decentralized form of record-keeping without any limit. It has fantastic user privacy and heightened security with little to no errors. Some disadvantages of blockchains is political and regulatory. Also, software design and back-end programming required to integrate blockchain to current business networks will take around 1000 hours to do. Overall, its very hard to adopt to blockchain.

1. Blockchain based games are the latest development in the gaming industry. Research the topic “Crypto Games” (google) to answer the following questions.
   1. What are some interesting Crypto Games available for Android or iPhone?

There are many kinds of crypto games that are available for Android or iPhone like Alien run and Abundance. PC games can be Crypto kitties, War Riders, Crypto Gladiator and many more.

* 1. How are they different from conventional games?

They are different from convectional games as you get paid for playing on these games and can possibly make a large amount of money from being able to sell your items that you earn in game. This is a good way to earn quick cash and make investments over a online browser game.

**Level 2: Bitcoin & The Economy**

Read the following resources before answering the questions below:

·        <https://www.cnet.com/how-to/what-is-bitcoin/>

·        <https://www.independent.co.uk/life-style/gadgets-and-tech/news/bitcoin-price-fall-criminals-blockchain-anonymous-cryptocurrency-zcash-monero-dash-a8174716.html>

·        <https://coincenter.org/link/why-ransomware-criminals-use-bitcoin-and-why-that-could-be-their-undoing>

1.    Who created BitCoin and who owns BitCoin now?

Bitcoin was invented in 2009 by a person or group who called themselves Satoshi Nakamoto. The person or group later gave the source code to others in the bitcoin community and subsequently vanished to not be heard from the internet again.

2.    How is BitCoin created and what is "BitCoin Mining"?

Bitcoin is a digital currency. There is no government or any sort of bank and authority. Bitcoins can connect buyers and sellers through encryption keys. Bitcoin mining is a term where a person can mine bitcoins by solving math problems and will be issues a certain number of bitcoins. Furthermore, the individual needs a very powerful PC with up to date graphics, CPU and RAM to be able to handle mining bitcoins.

3.    Can you buy BitCoin and what does it cost?

You can buy bitcoin however, you will need to use digital currency exchanges like Coinmama, CEX, Kraken and Coinbase which are the most known digital currencies trades. There is not an exact price on bitcoin as before it was only around $600 but now the price has increased to around $5000 CAD.

4.    Why would you want to buy BitCoin and what can you use it for?

You can use the bitcoin you earned to buy things from around 100,000 merchants that accept bitcoin as another currency.

5.    What are the risks of using BitCoin?

Risks of Bitcoin can be the worth or value of the coin. It is very volatile as it can change from worth every single day. Bitcoin transactions cannot be traced back to people who made the transaction and are secured. Due to this however, you will never be certain on who you are buying the Bitcoin from and who you are selling it to. Finally, another risk can be theft. Hackers can sometimes bypass the Bitcoin system and Blockchain system which can lead to them stealing a lot of money from several different accounts.

6.    How much of BitCoin business is related to criminal activity?

Bitcoin business is also related to criminal activity as the currency is also accepted on the Dark Web and Silk Road marketplace for many things like drugs, goods and services.

7. What are some of the reasons why criminals use BitCoin?

Criminals most likely use Bitcoin as a form of currency to do their dangerous acts as making transactions with the currency is untraceable.

8.    What are some of the disadvantages of BitCoin when used for criminal activity?

The disadvantages of Bitcoin when used for criminal activity could be leading to less people using the currency due to people believing that the digital currency is very shady.

9.    Many people dislike BitCoin because they think it is only good for criminal activity.

Is this true? Write a supported opinion paragraph (SOP) to explain your position.

To begin, BitCoin is a digital currency in which is used to buy many things from different kinds of merchants and with every transaction it is untraceable. I believe that BitCoin is not always used for just criminal activity. It is used for people to make investments to possibly earn a large sum of money, use it to buy products from stores and merchants, and finally anonymous buying. Making investments into bitcoin could earn an individual a large sum of money if they make the right and perfect investments. Secondly, you can use the money to buy products from over 100,000 merchants online, and some retail stores are beginning to use Bitcoin as a form of way to pay for the item. Lastly, transactions are untraceable due to blockchain’s programming in which any transaction will be untraceable. Cryptocurrency is a digital currency which is beneficial to anyone. It can be beneficial to even regular individuals as their transactions cannot be traced, can make investments to possibly earn a large amount of money and anyone can use bitcoin to buy from over 100,000 merchants.

**Level 3: Bitcoin & The Environment**

Read the following resources before answering the questions below:

* <https://www.cbc.ca/news/business/bitcoin-electricity-1.4668768>
* <https://www.cbc.ca/news/business/hut8-medicine-hat-bitcoin-mining-1.4834027>

1. What is a BitCoin “miner” and why are people concerned about BitCoin mining?

A BitCoin miner is a person who uses a lot of energy to solve math problems and then earn BitCoins in exchange. People are concerned about BitCoin mining due to the change in value every day which worries a lot of potential investors. Also, many people are concerned about Bitcoin mining due to the amount of electricity being used up.

1. Why does BitCoin mining use so much energy?  
     
   Bitcoin mining uses so much energy due to blockchain finding a server that finds the acceptable server around 10 minutes on average which then adds new blocks because the solutions are found. Computers hashing for bitcoins are using up around 2.5 gigawatts of power.
2. Why has Hut-8 decided to locate its facility in Alberta when its head office is in Toronto? What does the city of Medicine Hat provide that is required for mining BitCoin?  
     
   Hut-8 decided to locate its facility in Alberta due to the amount of BitCoin being able to be mined and Medicine Hat facility mines about 20 bitcoins per day. Therefore, Hut-8 located its facility in Alberta due to the Medicine Hat facility.
3. What benefits does the city of Medicine Hat expect to see from this BitCoin facility?  
     
   The benefits of this project are that Hut 8 has spent more than $100 million to increase the northern edge of the city. There are 56 shipping containers, each filled with 180 computer servers to mine more bitcoin. Also, this can also give a financial boost towards the city.
4. What concern does the city of Medicine Hat have about from this Bitcoin facility?

The concern of the city of Medicine Hat have about the Medicine Hat Bitcoin facility is the amount of energy which is being consumed by mining due to the amount of electricity being produced by fossil fuels. Facilities will have tto use more electricity compared to the amount of cryptocurrency they will have to collect due to the decreasing numbers of available bitcoins.

1. What concern do environmentalists have about the Medicine Hat facility and about Bitcoin mining in general? E.g. how does BitCoin mining harm the environment?

BitCoin mining harms the environment due to the amount of electricity being used. Most of the electricity in the city is produced by the burning of fossil fuels which then will use up all the energy which the fossil fuels has produced.

1. If Hut-8 wanted to build a facility in Brampton, would you be in favor of this proposal? Write a SOP to justify your position.

To begin, I believe that I would agree with this proposal as this could help boost Brampton’s economy, expand upon the city and benefit many individuals. Firstly, this could help boost’s Brampton’s economy due to the facility adding 40 full time workers which can be very beneficial to the workforce and economy. Secondly, Hut-8 could expand upon the city with the money earned from mining BitCoin and develop more infrastructure. Lastly, this can be beneficial to all individuals as this could give individuals more job opportunities due to the economy boost and extra facility being made. To conclude, I would agree with this proposal as it could boost Brampton’s economy, expand upon the city and benefit many other individuals.

Resources:

·         Guidelines for writing a supported opinion paragraph (SOP)

<http://schools.peelschools.org/sec/fletchersmeadow/studentlife/OSSLTprep/Documents/Sample_%20Writing%20a%20Supported%20opinion%20paragraph.pdf>