Outline:

Use selected online 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 digital currency that is heavily encrypted. It’s different from traditional money because it is completely digital and does not have any central bank system.

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

Other cryptocurrencies include Ripple, Ethereum, Chainlink, Dogecoin and Litecoin they are known as altcoins. They are modified versions of BitCoin. They have different unique features like Litecoin which has faster block generation rate and faster transaction rate than BTC.

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

Blockchain stores all transactions done with cryptocurrency

* 1. How they work

The transaction is created, verified, stored into a block and given a hash to differentiate it.

* 1. How they are secure and private

Each block is given a unique hash to differentiate it from others.

* 1. How they use public and private encryption keys

Bitcoin wallets are composed of a personal and a private key. The public key is where transactions are deposited and withdrawn from.

1. How does BitCoin use blockchains?

Bitcoin uses blockchains to store transactions. The transaction is then recorded publicly.

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

Other possible real-world applications of blockchain are voting, Government IDs, Transactions, Health care and citizen information.

1. What are some advantages and disadvantages of blockchains?

Blockchain is costly, and there is possibility of a 51% attack by a group of miners gaining control of over 50% of the network’s hash mining rate

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?

EOS Knights, Spells of Genesis, and Bitcomon Go

* 1. How are they different from conventional games?

They are different from traditional games as they connect to blockchain instead of a dedicated server.

**Level 2: Bitcoin & Society**

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?  
   The creator of BitCoin is Satoshi Nakamoto. In 2011 Nakamoto released the source code to others in the BitCoin community and disappeared.
2. How is BitCoin created and what is "BitCoin Mining"?  
   Bitcoin is created when someone makes a transaction on the Blockchain. Miners convert these “blocks” and turn them into sequences of code called ‘hashes’. Miners get BitCoin for successfully recording these transactions.
3. Can you buy BitCoin and what does it cost?  
   You can buy BitCoin from digital currency exchanges such as CoinBase, CEX, Coinmama. And Kraken. The cost of Bitcoin is dependent on the value of BitCoin at the time of purchase.
4. Why would you want to buy BitCoin and what can you use it for?  
   BitCoin can be used to buy things from over 100,000 merchants. You can sell it at a higher value for profit or you could keep it.
5. What are the risks of using BitCoin?  
   BitCoin is risky because the value fluctuates constantly and is not stable. Theft is also a problem.
6. How much of BitCoin business is related to criminal activity?  
   44% of BitCoin transactions were illegal and 25% of all users were involved in illegal activities according to researchers from University of Technology Sydney.
7. What are some of the reasons why criminals use BitCoin?  
   BitCoin is often used for criminal activity because of the decentralization and anonymity of the platform.
8. What are some of the disadvantages of BitCoin when used for criminal activity?  
   Disadvantages of BitCoin for criminal activity is that illegal activities is publicly stored in the Blockchain. Researchers say it’s possible to use this information to identify users.
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.  
    Bitcoin is not only good for criminal activity. Bitcoin is a legitimate currency that could become the future of currency. Bitcoin is accepted by over 100,000 online merchants. Only 44% of Bitcoin transactions are illegal. That is not the majority of transaction, and illegal transactions are even easier with cash. Cryptocurrency is a growing platform and has a lot of potential to become the future of currency.

Guidelines for writing a supported opinion paragraph (SOP)

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

**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 computer that does complex mathematical equations called hashes. These hashes verify transactions on blockchain. By verifying these transactions on the blockchain the miner is rewarded with BitCoin. People are concerned about BitCoin mining because it consumes a lot of power
2. Why does BitCoin mining use so much energy?  
   BitCoin mining uses a lot of energy because it requires a lot of computational power for hashing. There are many computers doing the calculations together.
3. 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?  
   It has several large power plants so the city can handle the power required to mine.
4. What benefits does the city of Medicine Hat expect to see from this BitCoin facility?  
   Medicine Hat has made a deal with Hut 8 for them to mine, as Hut 8 is leasing land from Medicine Hat. Financial details of their deal is unknown.
5. What concern does the city of Medicine Hat have about from this Bitcoin facility?  
   People are concerned with the large amounts of emissions. Medicine Hat uses fossil fuel energy so the massive amounts of energy being consumed will cause pollution.
6. 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 consumes enormous amounts of energy. Environmentalists are concerned because they do not want things to consume a lot of energy, especially if they’re consuming fossil fuels.
7. If Hut-8 wanted to build a facility in Brampton, would be in favor of this proposal. Write a SOP to justify your position.

I would not be in favor of Hut-8 setting up a facility in Brampton. They would be consuming a lot of energy and Brampton does not produce their own energy. Hydro One is producing our energy not the city. Since they consume so much energy, there could be outages. I do not want outages for me and others in this area. I do not want a mining company to build a facility in Brampton because they could cause problems for me and others in the community.