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 digital currency which is encrypted to regulate the amount of currency and to verify the transfer of funds. Crypto currency is completely digital, and operates independent of governments.

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

Dogecoin, Litecoin, and Ethereum. They were all initially spinoffs of bit coin but gained their own distinct values over time. Etherum is built and run without any downtime, fraud, control or interference from a third party. The applications on Ethereum are run on its platform-specific cryptographic token. Lite coin is a cheaper edition of bitcoin, it also has a faster block generation rate and hence offers a faster transaction confirmation. Dogecoin is a meme that was taken seriously and became worth over USD a year after its inception, but has gone down since. It is now just used a joke on the internet since its value has dropped to 0.00 USD.

1. “Blockchains” are the basic technology behind cryptocurrencies and other emerging technologies. Explain blockchains work with respect to:
   1. What they store They record transactions.
   2. How they work The transaction is made, verified, stored into a block, and then given a “hash” to differentiate it from other blocks.
   3. How they are secure and private Each block has a unique code attached to them called a “hash” which lets it distinguish between itself and other blocks.
   4. How they use public and private encryption keys

The public key is then used with a hash function to create the public address that users use to send and receive funds. The private key is kept secret and is used to sign a digital transaction to make sure the origin of the transaction is legitimate.

1. How does BitCoin use blockchains?

To record transactions.

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

To monitor the lifecycle of food, so consumers know about it from the moment it is farmed, to the moment they buy it and any unwanted substances it could have procured during the procedure.

1. What are some advantages and disadvantages of blockchains?

Advantages, its public and uncontrolled by any figure. Disadvantages are they cost allow to mine a single bitcoin, and very inefficient as it take 10 minutes to create a block.

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?
   2. Crypto Baseball, Gods Unchained, CryptoBytes, Everdragons, Blockchain Cuties, and Warfeild.
   3. How are they different from conventional games?
   4. They are artistic blockchain based games.

**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?  
     
   It was claimed to be invented by Satoshi Nakamoto. As of right now, no one owns bitcoin, as it is a decenteralized electronic cash system.
2. How is BitCoin created and what is "BitCoin Mining"?

A miner record transactions made during a certain period of time in a block. They use special software to inscribe transactions in a digital ledger. Using more specialized software, which energy intensive hardware, miners convert blocks into sequences of code, called “hash”. When the hash is generated, it is placed into the blockchain, which is then publically updated and propagated. The miner then gets paid for their trouble in bitcoin.

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

You go to a digital currency exchange, in which you set up your own personal account. You then use money from your bank in real life, and deposit it into your virtual wallet. After your account is funded, you can exchange it for the virtual currency.

1. Why would you want to buy BitCoin and what can you use it for?  
     
   You could use it to purchase goods from merchants. You could sell it. Or you could hang on to it and hope its value rises.
2. What are the risks of using BitCoin?

Bit coins value is very volatile, both rising and dropping frequently. Bitcoin transactions cannot be traced back to individuals, keeping all transactions private. Bitcoin can be stole via hacking.

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

Depending on how its used it could be linked to criminal activity. Such as hacking and stealing bitcoin as mentioned earlier, or using it for black market transactions, such as buying drugs, or even money laundering.

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

Due to bitcoin transactions being untraceable, criminals could use bitcoin in illicit transactions that will not be likely to be found by the authorities.

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

Criminals get rich from the high price of the coins and ease of amassing coming from victims or the use of coins in transactions that will not be traced back to them.

1. 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.

Although bitcon can be used for criminal activity, it is not used solely for nefarious purposes. Technically all currency can be used for criminal activity, so it is unfair to pin blame only on bitcoin. After all it has other uses, such as buying goods and services from high profile businesses. Or, inadvertently teaching the general public how to code, as in order to ear bitcoin, one must mine it through coding practices, which in the long term is a useful skill for everyone to develop.

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 someone trying to mine bittcoin. The general public is concerned due to the immense amount of electricity in order to mine.

1. Why does BitCoin mining use so much energy?

The computational power needed in order to mine is large, so in order to maintain the pwer to keep running for long periods of time, miners have to keep giving it electricity 24/7, which in the long run leads to mass energy consumption.

1. 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?  
     
   “The bitcoin mining facility is located right beside the city of Medicine Hat's new natural gas-fired power plant and four wind turbines are a short distance away.”
2. What benefits does the city of Medicine Hat expect to see from this BitCoin facility?

The city offers low cost energy, and with a huge company opening shop to use energy 24/7, they will in turn make huge profits from the energy use.

1. What concern does the city of Medicine Hat have about from this Bitcoin facility?

“The bitcoin plant can consume more than 60 megawatts of power, more than 10 times more electricity used by any other facility in the city, according to the mayor. That's why, in the event of a summer heat wave, the city has provisions in place to pull the plug on the electricity it provides to Hut 8, so there won't be any blackouts for residents, according to the mayor.”

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

The energy produced in Medicine Hat is through fossil fuels, which leads to a severe increase in carbon gas emission.

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.

No I would not be in favor, as personally I use electronic devices a lot myself, and due to that fact I would not like it if a factory opened up one and consumed all the of available electricity that is being sent to my home. Also, due to the amount of electricity they use, the most probable scenario is that electricity prices will also go up due to the law of supply and demand.