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.

**BitCoin & Crypto currencies**

Use the following resource to answer the questions below:

* <https://www.investopedia.com/tech/most-important-cryptocurrencies-other-than-bitcoin/>

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

Crypto currency is virtual money which takes the form of tokens. It is different from other traditional currencies as Crypto currencies is virtual and not able to be duplicated.

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

* Litecoin has a faster block generation rate and hence offers a faster transaction confirmation.
* Zcash claims to provide extra security or privacy where all transactions are recorded and published on a blockchain, but details such as the sender, recipient, and amount remain private.
* Dash offers more anonymity as it works on a decentralized master code network that makes transactions almost untraceable.
* [Ripple](https://www.investopedia.com/terms/r/ripple.asp) is a real-time global settlement network that offers instant, certain and low-cost international payments

**Block Chains Explained**

Use the following resource to answer the questions below:

* <https://www.investopedia.com/terms/b/blockchain.asp>

1. “Block chains” are the basic technology behind crypto currencies and other emerging technologies. Explain block chains work with respect to:
   1. What they store

“Blocks store information about transactions like the date, time, and dollar amount of your most recent purchase from Amazon.”

* 1. How they work

“Block chains way of working is when a block stores new data, it is added to a block chain. But for a block to be added to a block chain, four things must occur. They are that a transaction must occur happen, the transaction must be verified, it must be stored in a block, and then that block must be given a hash. When a new block has been added to a block chain, it becomes publicly available for anyone to view. “

* 1. How they are secure and private

Block chains are secure because hacking block chains is very difficult. It is hard as if you change a block, you will have to change the next block, and every other block after that. Also, there is also a proof of work system and this makes hacking useless because it costs a lot.

* 1. How they use public and private encryption keys

Each user has a wallet and it consists of two unique keys, the pubic key and the private key. The public key is where the transactions are deposited to and withdrawn from. But the only person who can retrieve the contents from the public keys is the one who has the private key.

1. How does BitCoin use block chains?

The BitCoin protocol is built on block chain. Transactions made on Bitcoin are regulated by a network of computers, not a third party.

1. What are some advantages and disadvantages of block chains?

Advantages:

* It is secure and private
* It is easy to understand

Disadvantages:

* It is very hard to hack block chains, but it is possible
* It could be used in criminal activity
* Costly

**Crypto-Games & Other Applications**

Use the following resource to answer the questions below:

* <https://egamers.io/beginners-guide-to-crypto-games/>

1. What are some interesting Crypto Games (i.e. games that use Block Chain technology) available for Android or iPhone?  
   Casa Tookan Wallent

Trust Wallet

Guild Chat Wallet

1. How are Crypto Games different from conventional games?

Crypto Games are different from conventional games, as Crypto games **allow players to earn crypto** through various activities. For example, some games reward players with their in-game currency which can be later exchanged for other mainstream cryptocurrencies or purchase items and characters that can be sold in Marketplaces.

1. What are some other real-world applications of block chains besides games and crypto currencies?

Blockchain technology can be used to store data about property exchanges, stops in supply chain, and voting for a candidate. Blockchains are being used in sectors such as banks, cryptocurrencies, healthcare, property records, small contracts, supply chains, and voting.

**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. How is BitCoin created and what is "BitCoin Mining"?  
   Bitcoin is created by conforming transactions and adding a block to a block chain. The rewards for doing this difficult task is Bitcoins. BitCoin mining is when a person, group or company verify a transaction and create a hash. This results in a block being added to the block chain.
2. Can you buy BitCoin and what does it cost?  
   “There is an increasing number of digital currency exchanges like Coinmama, CEX, Kraken and Coinbase -- the largest and most established of them -- where you can buy, sell and store bitcoins.”
3. What can you use BitCoin for?  
   “You can use bitcoin to buy things from [more than 100,000 merchants](https://www.cnet.com/pictures/25-things-you-didnt-know-you-could-buy-with-bitcoins/), though still [few major ones](https://www.cnet.com/news/you-cant-really-shop-much-online-with-bitcoin-says-report/). You can sell it. Or you can just hang on to it. Note that there are no inherent transaction fees with bitcoin, although exchanges like Coinbase typically charge a fee when you buy or sell.”
4. What are the risks of using BitCoin?  
   The financial value of a bitcoin, however, is highly volatile and may swing widely from day to day and even hour to hour.
5. How much of BitCoin business is related to criminal activity?  
   “Almost half of all [bitcoin](https://www.independent.co.uk/topic/bitcoin) transactions are associated with illegal activity, a new study has concluded”
6. What are some of the reasons why criminals use BitCoin?

“One of the main reasons bitcoin is so popular with criminals is that the cryptocurrency allows users to conceal their identities.”

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

[Every transaction is recorded on a public ledger called the blockchain](https://www.independent.co.uk/news/business/news/big-banks-blockchain-cash-system-ubs-digital-payments-transactions-technology-financial-services-a7922706.html).**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?  
   “Bitcoin mining is the process of adding transaction records to Bitcoin's public ledger of past transactions or blockchain.” People are concerned about it because it uses hundreds of computers that take up a lot of energy which affects the environment.
2. Why does BitCoin mining use so much energy?  
   Since, there is a lot of computers mining bitcoins at the same time, which needs a lot of energy.
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?  
   The Hut-8 has decided to locate its facility in Alberta because of the low-cost energy usage.
4. What benefits does the city of Medicine Hat expect to see from this BitCoin facility?

Medicine Hat, the city in which the facility is located, believes that this project will be an economic boost to the city.

1. What concern does the city of Medicine Hat have about from this Bitcoin facility?  
   “Over time, as more miners compete for a decreasing number of available bitcoins, facilities will have to use more electricity compared to the amount of the cryptocurrency they collect.”
2. 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 way the bitcoin algorithm works is that it's designed to waste as much electricity as possible. And the more popular bitcoin becomes, the more electricity it wastes," said Keith Stewart, a spokesperson for Greenpeace.
3. If Hut-8 wanted to build a facility in Brampton, would be in favor of this proposal? Explain why and why not.

In my opinion, I think Brampton will not be a suitable place for Hut-8 to build a facility. This is mainly because of the large population, and the lack of energy. If Hut-8 were to build a facility in Brampton, the taxes will be higher, there will be blackouts and the city will need more suppliers.