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 defined as virtual or digital money, that can take form of tokens or coins. This allows the digital tokens to be generated, stored and transacted securely and typically anonymously. For example, credit cards and bitcoins are types of crypto currency.
   * It’s different from real traditional currencies, because crypto currencies are digital money and traditional cash is a physical copy of money.
2. **BitCoin is the leading crypto currency that most people know. What are some other crypto currencies and what are their unique features?**

|  |  |
| --- | --- |
| **Cryptocurrencies** | **Description** |
| - Litecoin (LTC) | - One of the first types of cryptocurrencies to be launched in 2011  - Referred to as “silver to bitcoin’s gold”  - It’s based on an open-source global payment network, that’s not controlled by any central authority.  - uses “crypt” as a proof of work, which can be decoded.  - Faster block generation rate and offers a faster transaction confirmation than Bitcoin.  - In 2019 Litecoin had a market cap of $2.63 billion |
| -Ethereum (ETH) | - launched in 2015  - it’s a decentralized software platform  - It provides: Smart Contracts and Distributed Application (DApps) to be built and run without downtime, fraud, control or interference from a third party |
| Dash (DASH) | -A more anonyms version of bitcoin.  - decentralized master code network  It makes transactions almost untraceable. |

**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**
      1. They store information about your recent transactions such as the time, date, and dollar amount. They also store information about the other parties involved in the transaction.
   2. **How they work**
      1. After you make a purchase, you need to verify the purchase by adding in the dollar amount, time, and participants. Then, thousands of computers to ensure that all the information you have inserted is correct within a second. After this, the information is stored in a block so that the transaction goes through, and it joins thousands of other purchases. Then, the block is given a has (a unique code) and it is added to the block chain.
   3. **How they are secure and private**
      1. Due to the large amount of accounts, a hacker would need to infect the whole block chain and not just the one, making that much harder to break into. It is hard to obtain personal information and it is not displayed. Also, one block is added to the chain, it is next to impossible to change or delete since one would have to change the hash and every other block as well.
   4. **How they use public and private encryption keys**
      1. Private encryption keys are used as locker combinations where only the person who knows the combination can access the goods. The entire block chain is shared and maintained by a group of users and when the chain is updated, so is theirs. Also, the program will ensure that block chain does not have any duplicate blocks by deleting the shortest block that copies another.
2. **How does BitCoin use block chains?**
   1. When one pays with bitcoin, thousands of computers to verify the transaction by solving a hash. People also help this process along and they are rewarded with bitcoin as well. It allows the currency to be its own thing and it does not have to be controlled or managed by anyone.
3. **What are some advantages and disadvantages of block chains?**

|  |  |
| --- | --- |
| Pros | Cons |
| Improvement in accuracy  Cost reduction  Secure and Private  Easy to understand | Large cost of technology  Slower transaction speed  Used for criminal activities  Can be hacked into |

**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?**
   1. Casa Tookan Wallet
   2. Trust Wallet
   3. Guild Chat Wallet

1. **How are Crypto Games different from conventional games?**
   1. One difference is that they use block chain technology with crypto currency. One can also earn crypto currency through various activities in the game and they are limited to mobile devices.
2. **What are some other real-world applications of block chains besides games and crypto currencies?**
   1. Tracking a package
   2. Retailing
   3. Banks

**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"?**
   1. Bitcoin was created by a group who wanted to create an electronic currency and it is mined by solving and inscribing math problems.
2. **Can you buy BitCoin and what does it cost?**
   1. You can buy bitcoin by investing in it through the stock market. Then, you can create an account on a certain base and linking your bank account to it to move the goods.
3. **What can you use BitCoin for?**
   1. You can use bitcoin to buy products from many merchants, or sell it for money.
4. **What are the risks of using BitCoin?**
   1. The value of the Bitcoin can drop dramatically at any time and you could lose your money. You can never be certain who you are buying bitcoin from and you can be scammed.
5. **How much of BitCoin business is related to criminal activity?**
   1. 44% of bitcoin transactions has been used for illegal actives as people use them for scams, drug deals and a general payment method.
6. **What are some of the reasons why criminals use BitCoin?**
   1. It allows people to conceal their identity, it allows criminals to store their money safely, it will not raise suspicion.
7. **What are some of the disadvantages of BitCoin when used for criminal activity?**
   1. Every transaction is stored; it can be tracked back to the point of origin or location of the device.

**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 transactions records. People are concerned about this because it uses a lot of electricity. The electricity it uses is as much as Medicine Hat.
2. **Why does BitCoin mining use so much energy?**
   * Making a bitcoin is very limited and hard to make. They have a set algorithm that is complex.
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?**
   * There is a large amount of electricity needed. They have spent over $100 Million to develop the site. Medicine Hat owns its own natural gas and energy generation and distribution businesses. Since Medicine Hat owns its own natural gas they do not need another supplier and it more convenient.
4. **What benefits does the city of Medicine Hat expect to see from this BitCoin facility?**
   * A huge business is being created in their small town which they could be recognized for in the future. It creates more job opportunities for the people that live there.?
5. **What concern does the city of Medicine Hat have about from this Bitcoin facility?**
   * The mining is releasing large amounts of gas emissions into the air. This increases pollution and can tend to make it harder to breathe.
6. **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?**
   * It releases large gas emissions. This effects the o- zone layer causing irregular weather patterns and smog.
7. **If Hut-8 wanted to build a facility in Brampton, would be in favor of this proposal? Explain why and why not.**
   * No, I would not be in favor of this project because we already have lots of pollution from factories, gas operated cars and heating/ cooling systems. I think we are a established town that offers many job opportunities that does not need more. Having more jobs can increase the population which I think is very high already.