AFROTECH GIRLS

Blockchain and Cryptocurrency for Teens

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Presentation Outline

POINTS OF DISCUSSION

What is blockchain?
Consensus Models
Features of the blockchain?
Challenges with the blockchain
Types of Blockchains
Use Cases
Cryptocurrency
Smart Contracts and DApps
Regulation
Possible Blockchain Career Path
Future of Blockchain
Activity: Opening a Crypto Wallet
Homework

Outcomes

At the end of this training, participants should be able to:

- Explain what blockchain is
- Give examples of things blockchain can be used for
- Say a few 'bad' sides of the blockchain
- Give a brief history of money
- Explain cryptocurrency and mention a few examples
- Set up your own crypto wallet

Blockchain

Definition

Bitcoin is not synonymous to blockchain

Blockchain is like electricity

Blockchain is a digital record or a digital database which is replicated on several computers.

Distributed

Decentralized

Immutable

Unhackable

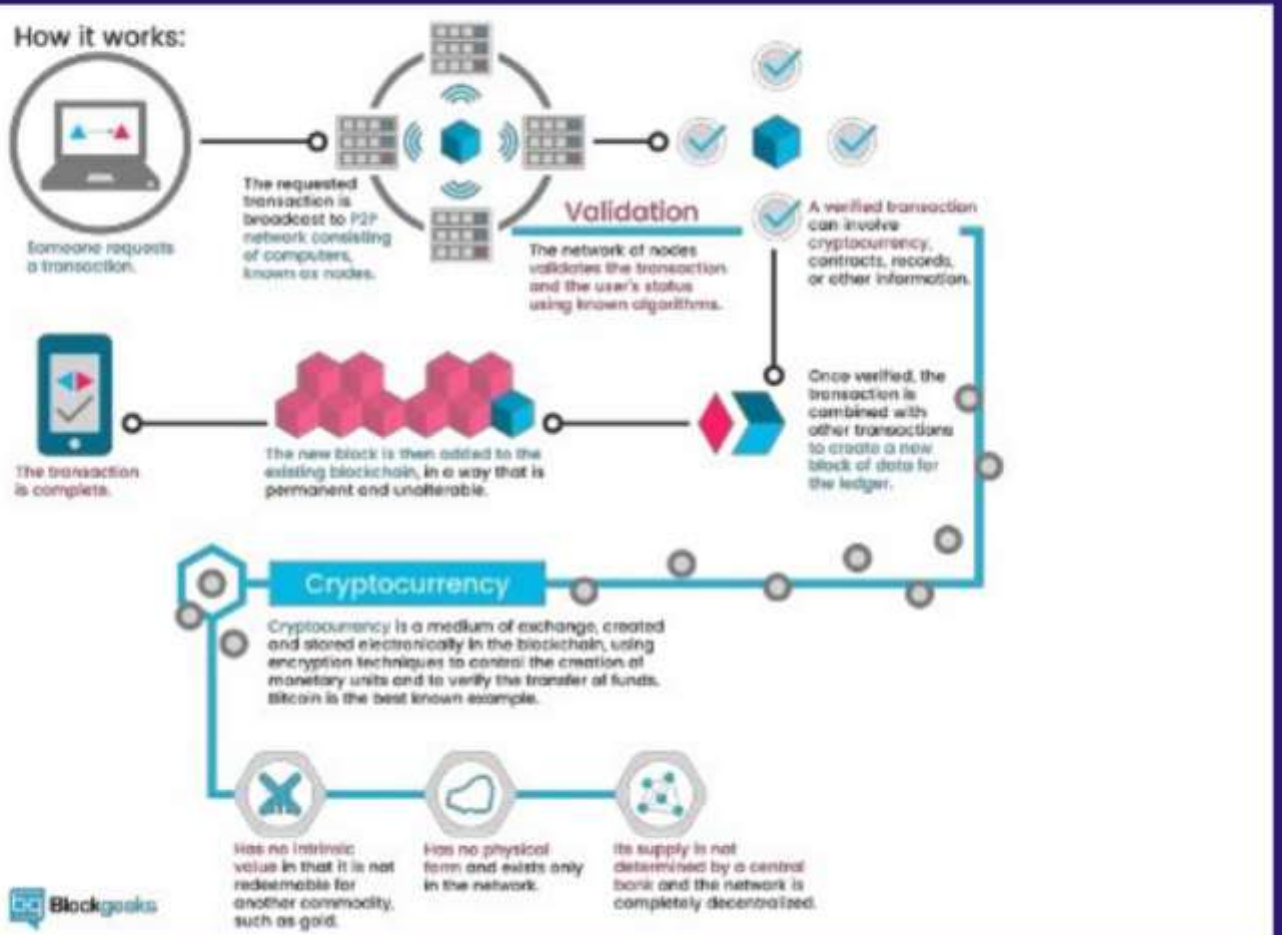
How Blockchain Works

A notebook is used to record entries. Everyone has a notebook (computer/nodes)

When a page is full, you move on to the next page, that's a block. As you have more and more blocks, they form a chain. BLOCK-CHAIN

Before new data (transaction) is added on the blockchain, a very difficult maths problem has to be solved. Whoever solves the problem is paid for solving it and all the nodes (computers) must agree with the answer, that is, reach a consensus, before the new data is then added.

How Blockchain Works



Consensus Models

A decentralized system has no single authority, but reaches decisions via a process called consensus algorithm

1. Proof of Work (PoW)
2. Proof of Stake (PoS)
3. Delegated Proof of Stake (DPoS)
4. Leased Proof of Stake (LPoS)

5. Proof of Burn (PoB)
6. Proof of Activity (PoA)
7. Proof of Capacity (PoC)
8. Proof of Importance (PoI)

9. Proof of Identity (PoId)
10. Proof of Weight (PoWeight)
11. Directed Acyclic Graphs (DAG)
12. Practical Byzantine Fault Tolerance (PBFT)

13. Delegated Byzantine Fault Tolerance (DBFT)
14. Simplified Byzantine Fault Tolerance (SBFT)
15. Proof of Elapsed Time (PoET)

PROOF OF WORK

Nodes race to solve a mathematical puzzle.

Difficulty is reset every two weeks.

New block is created every 10 minutes.

Computational power is spent solving the puzzles, called mining.

- Bitcoin
- Ethereum***
- Litecoin

HYBRIDS

Blockchains that adopt more than one consensus algorithms.

TrueChain, a public blockchain using a hybrid of PBFT-fPoW called Minerva.

PROOF OF STAKE

Miners stake their coins to get selected to mine blocks and validate transactions.

Selection is a combination of various factors like a random process, age of miner on the network and amount staked.

- Dash
- OKCash
- NEO

Features of the Blockchain

There are several, which makes it attractive to individuals, corporate entities and even government.

DECENTRALIZED
No single control. Decisions reached via consensus algorithms

DISTRIBUTED
Participants are found in different locations

PSEUDONYMOUS
Partial anonymity. People are identified by wallet addresses, a string of alphanumeric characters

IMMUTABLE
Unforgettable. Cannot be edited.

OPEN SOURCE
Freely available for anyone to copy, use and modify.

Cryptography and Hashing

A E I O U
1 2 3 4 5

All vowels were assigned five numbers respectively, while an ‘a’ is written after each consonant.

Thus, my name FAITH, will be written as: FA13TAHA.

On the blockchain, cryptography is used for encrypting (securing) data entered on the digital ledger.

Public keys are used to interact with other participants on the network, while private keys are used to sign transactions.

Challenges with the Blockchain

LACK OF TRANSACTION REVERSALS

Immutability further means erronous transactions, once confrimed, cannot be reversed.

INCOMPATIBILITY WITH OTHER FRAMEWORKS

DLTs are notorious for totally replacing existing frameworks.

Also, different blockchains are not compatible with each other. One cannot transact between the Bitcoin blockchain and the Ethereum blockchain.

REGULATORY UNCERTAINTIES

Countries around the world have adopted different approaches to the blockchain.

Some are banning, some are neutral, while a few forward-looking countries are developing tailor-made legal frameworks.

Types of Blockchain

PUBLIC AND PERMISSIONLESS

- Anyone anywhere can participate.
- Permission not needed.
- Consensus algorithm is used for governance.

Bitcoin
Ethereum

PRIVATE AND PERMISSIONED

- Single controlling entity.
- Permission needed.
- Consensus algorithm not used

NASDAQ

CONSORTIUM

- Neither private nor public.
- Authority nodes are preselected.

JP Morgan's Quorum
Ripple

HYBRIDS

- Cross planting between public and private.
- Both advantages under one chain

XDC

Use Cases of Blockchain

THREE BROAD AREAS

- There is a need for an immutable record. Example entry and exit on a country's borders or financial transactions.
- There is a need for digitization of physical assets. Example representing a car or land digitally with a unique string of alphanumeric characters.
- There is a need for digitization of processes. Example, the process from opening a bank account, to getting your ATM card.

GOVERNMENT

- Voting
- Identity management

EDUCATION

- Track payment of school fees.
- Record degree certificates which can be tokenized and verified by anyone anywhere.

HEALTHCARE

- Track genetics and DNA mutations.
- Record patient data

INDUSTRIAL

- Verification of genuine products

TOKENIZATION

- Representation of assets digitally on a blockchain by assigning a unique string of alphanumeric characters to a specific asset.

INTELLECTUAL PROPERTY

- Enable creators to directly interact with their fans, track sales and conduct private auctions.

CRYPTOCURRENCY

Cryptocurrency is inevitable and here to stay

WHY SO?

Let's have a brief history of money

Long long ago, there was no money on earth. Humans had to do trade by barter.

The problem with this type of exchange was availability and desirability.

This led to the use of cowrie shells. So, when I need a chicken, all I have to do is give the man or woman selling chickens in the market an agreed amount of cowries.

After cowries came coins. Kobo. But they were very heavy to carry about.

Coins soon gave way to paper money which we're all familiar with.

From paper money, we now have virtual money, or digital currency.

The Problem With Virtual Money: Double Spending

You could have a ₦10,000 balance and still be able to send the virtual ₦10,000 to Nkechi and Bunmi, and everyone you know, and yet... still have the virtual ₦10,000.

To solve this problem of double spending, a middleman was required to keep records of everyone's transactions.

When Bunmi sends Nkechi ₦10,000, two things happen: the middleman reduces Bunmi's balance by ₦10,000 and increases Nkechi's balance by ₦10,000.

BITCOIN

- Most popular
- Invented by Satoshi Nakamoto
- From $0 to over $17,000 in 2017
- market cap is at $71 billion
- Currently trading at around $4000

ALTCOIN

- Every crypto not bitcoin
- Currently over 1600 altcoins
- Ether (ETH), Litecoin (LTC), NEO, VeChain (VEN), Lisk (LSK), Stellar (XLM), etc.

HOW CRYPTOS GET THEIR PRICE

- Perceived value ascribed by users
- pull of demand and supply

STORING CRYPTO

Cryptos are stored in wallets.

TYPES OF WALLETS

Hot and Cold.
Hot wallets are wallets connected to the internet. Cold wallets are those not connected to the internet.

Smart Contracts and DApps

Codes written by smart people to represent a 'contractual' agreement. They are self-executing codes hosted on a blockchain.

Originally created by Nick Szabo.

Made popular by Ethereum.

IF-THEN-ELSE command

Allowing an event to occur once all conditions precedent have been met.
can be deployed on a grand scale to form DAOs (Decentralized Autonomous Organizations)

Regulation

At the moment, Nigeria does not have a definite, bespoke legal framework for blockchain and crypto. Nor has digital currency activities been banned anywhere across the country. The Central Bank of Nigeria, in 2017 issued a warning to Nigerians and banks.

The Securities and Exchange Commission (SEC) is yet to come up with tailor-made regulations for activities in the space. In late 2018, SEC decided to come up with a Capital Market Committee on Fintech Roadmap for Capital Markets in Nigeria.

Developing regulatory policies for FinTech in Nigeria, including blockchain technology applications. Interestingly, anything crypto related was expressly excluded.

Who can regulate?

Depends on definition: as a currency or as a commodity?
As commodity means one can exercise proprietary rights. And states can legislate on it. Trust Lagos to blaze the trail.
As a currency, it would simply be a means of holding value, with exclusive legislative rights resting in the federal government.

They should be balanced by protecting vulnerable investors while not stifling innovations.

Any Applicable Regulation?

No specific or tailor-made laws regulation does not mean it is free for all. Several existing laws such as those relating to capital markets, investment, technology, Anti Money Laundering and data protection, apply.

Possible Blockchain Career Paths

There are jobs for both techies and non-techies. Demand keeps increasing daily, however, there is a shortage of available skills. LinkedIn reports that listings for blockchain jobs have increased by 63%!

- Trader
- Blockchain Programmer
- UI/UX Designer
- Smart Contracts Programmer

- Smart Contracts Auditor
- Blockchain Architect
- Accountant
- Investor

- Consultant
- Crypto Analyst
- Lawyer
- Writer/ proofreader

- Trainer
- Custodian
- Broker
- Researcher

Consider These Pairings:

Blockchain and Cybersecurity

Blockchain and Data Protection

Blockchain and GDPR

Blockchain and Tax

Blockchain and Capital Markets (securities)

Blockchain and Tokenization (digital assets management)

Blockchain and Intellectual Property

Blockchain and FinTech

Blockchain and Smart Contracts (DApps and programming)

Blockchain and IT (Information Technology)

Blockchain and Arbitration (Online Dispute Resolution)

Blockchain and Real Estate

Blockchain and ICO/ITO/TGE/STO/IEO

Blockchain and Cryptocurrency/Digital Currency

Blockchain and AI (Artificial Intelligence)

Career Road Map

Follow these steps if you wish to build a career in blockchain.

STAGE 1
Learn.
Take online courses

STAGE 2
Build an online presence and reputation by sharing content.

STAGE 3
Attend and speak at events, for quality networking

STAGE 4
Find an opportunity to apply all you've learnt.

STAGE 5
Keep up to date by staying on top of latest happenings.

Future of Blockchain

THREAT OR OPPORTUNITY?

The space is fast developing and we can expect more concentrated activities in the future. Most especially with regards to regulatory uncertainties and an influx of institutional money and participation.

A survey by Deloitte showed that almost half of the executives surveyed said they would be investing at least $5 million in exploring blockchain this 2019.

Nigeria should focus on education rather than speculation.

EDUCATION IS THE MOST POWERFUL WEAPON WHICH YOU CAN USE TO CHANGE THE WORLD

Nelson Mandela

Activity

Set up a Wallet!

HOMEWORK

Project
(Work on Use Cases)

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