

# L26: Gaming NFTs and Metaverse

## Module C: NFTs & Digital Assets

Blockchain & Cryptocurrency Course

December 2025

By the end of this lesson, you will be able to:

- Understand the play-to-earn gaming model and tokenomics
- Analyze Axie Infinity's rise and collapse as a case study
- Evaluate virtual land NFTs in metaverse platforms
- Assess interoperability challenges for cross-game assets
- Identify sustainability issues in blockchain gaming economies

## Traditional Gaming:

- Players pay for games and in-game items
- Items locked to game (no true ownership)
- No ability to trade or sell assets outside platform
- Value accrues to game company, not players

## Blockchain Gaming:

- In-game assets are NFTs (player-owned)
- Items tradable on open marketplaces
- Players can earn cryptocurrency while playing
- Potential for cross-game asset portability

**Promise:** Players as stakeholders, value extraction to players

# Play-to-Earn (P2E) Model

**Concept:** Players earn tokens/NFTs through gameplay

## **Mechanics:**

- 1 Player acquires NFT characters/assets (upfront investment)
- 2 Player completes in-game tasks (battles, quests, farming)
- 3 Game rewards player with tokens (fungible cryptocurrency)
- 4 Player sells tokens on exchange or buys more NFTs

## **Economic Model:**

- New players buy NFTs (inflow of capital)
- Existing players earn and sell tokens (outflow)
- Sustainability requires continuous new player demand
- Resembles Ponzi dynamics if not backed by real value

## Game Overview:

- Creature-battling game (similar to Pokemon)
- Players collect, breed, and battle Axies (NFT creatures)
- Developed by Sky Mavis (Vietnam-based studio)
- Launched: 2018, exploded in popularity 2021

## Tokenomics:

- **Axie NFTs:** Characters needed to play (3 required)
- **AXS (Axie Infinity Shards):** Governance and staking token
- **SLP (Smooth Love Potion):** In-game reward token, breeding cost

## Peak Stats (2021):

- 2.8 million daily active users
- \$4B+ total trading volume
- Entry cost: \$600-1000 (3 Axies)

## Growth Drivers:

- 1 **COVID-19 Pandemic:** Unemployment in developing countries (Philippines)
- 2 **Scholarship Programs:** Guilds lend Axies to players (split earnings)
- 3 **High SLP Earnings:** Players earned \$10-40/day (above local wages)
- 4 **Viral Growth:** Word-of-mouth in Southeast Asia
- 5 **Investor Hype:** Andreessen Horowitz (a16z) invested \$152M (2021)

## Social Impact:

- Filipinos quit jobs to play Axie full-time
- Media coverage: “The future of work”
- Axie became top NFT game by volume

## Tokenomics Breakdown:

- **SLP Inflation:** Unlimited minting from gameplay
- **Demand Collapse:** Breeding declined (SLP use case)
- **Price Death Spiral:** SLP price fell 99% (peak \$0.40 to \$0.004)
- **Player Exodus:** Earnings dropped below minimum wage

## Timeline:

- July 2021: 2.8M DAU, SLP at \$0.30
- November 2021: SLP drops to \$0.10 (sell pressure)
- March 2022: Ronin bridge hack (\$625M stolen)
- June 2022: 500k DAU, SLP at \$0.01
- 2024: ~10k DAU, SLP at \$0.003

**Lesson:** Unsustainable tokenomics without real value creation

# Axie Infinity Case Study: What Went Wrong?

## Fundamental Flaws:

- ❶ **Ponzi Dynamics:** Relied on new player money to pay existing players
- ❷ **Unlimited Inflation:** SLP had no supply cap (infinite minting)
- ❸ **Weak Demand Sinks:** Breeding not enough to absorb SLP supply
- ❹ **High Entry Barrier:** \$600-1000 initial cost deterred new players
- ❺ **Gameplay Quality:** Repetitive, grind-focused (not fun)

## Counterfactual:

- If SLP had fixed supply or burning mechanisms, price could stabilize
- If game had intrinsic fun (not just earnings), retention would improve
- If entry cost was lower, new player flow would continue

**Conclusion:** P2E model requires genuine value creation, not just token redistribution



**Incident:** Largest DeFi hack in history

**Details:**

- **Target:** Ronin Network (Ethereum sidechain for Axie)
- **Amount stolen:** 173,600 ETH + 25.5M USDC = \$625M
- **Attack vector:** Social engineering of validators
- **Discovery:** Hack unnoticed for 6 days

**Impact on Axie:**

- Player confidence shattered
- Sky Mavis raised \$150M to reimburse victims
- Accelerated player exodus (already declining from SLP collapse)

**Lesson:** Centralized bridges (Ronin had 5-of-9 validator model) are critical vulnerabilities

**Concept:** Owning digital land parcels as NFTs in virtual worlds

## Major Metaverse Platforms:

- **Decentraland:** Ethereum-based, 90,000 parcels
- **The Sandbox:** Polygon-based, 166,464 parcels
- **Otherside (Yuga Labs):** BAYC metaverse, 100,000 parcels
- **Somnium Space:** VR-focused metaverse

## Value Proposition:

- Build experiences (games, galleries, events)
- Monetize through rentals or advertising
- Speculate on location value (virtual prime real estate)

**Reality:** Low usage, most land undeveloped, speculation-driven prices

**Launched:** 2020, Ethereum-based

**Structure:**

- 90,000 LAND parcels (16x16 meter plots)
- Parcel coordinates: (-150, -150) to (150, 150)
- MANA token: Currency for buying land and assets
- DAO governance: Landowners vote on platform changes

**Peak Hype (2021-2022):**

- Prime land sold for \$2.4M (near central plaza)
- Brands bought land: Samsung, Adidas, Sotheby's
- Virtual concerts and events (Decentraland Fashion Week)

**Current State (2024):**

- Daily active users: ~1,000 (low engagement)
- Floor price: \$500-1,000 per parcel (down 90%+ from peak)

# The Sandbox: User-Generated Metaverse

**Model:** Minecraft-style voxel world with NFT land

## Key Features:

- **VoxEdit:** Tool to create 3D voxel NFT assets
- **Game Maker:** No-code tool to build games on land
- **SAND token:** Platform currency
- **166,464 LAND parcels:** Fixed supply

## Partnerships:

- Snoop Dogg's virtual mansion (land sold for \$450k next to it)
- Atari, The Walking Dead, Smurfs (branded experiences)

## Challenges:

- Most experiences low-quality (limited Game Maker capabilities)
- Low user retention (few return after initial visit)

**Launched:** 2022 by Yuga Labs (creators of BAYC)

## Details:

- 100,000 Otherdeed NFTs (land parcels)
- Mint price: 305 APE ( \$5,800 at time)
- Total mint revenue: \$560M (largest NFT land sale)
- Powered by Improbable's M2 technology (scalable multiplayer)

## Unique Features:

- Each parcel has unique terrain and resource attributes
- Integration with BAYC, MAYC, and other Yuga IPs
- Focus on gaming experiences (not just social hangouts)

**Status:** In development, limited public access (2024)

## What Determines Land Value?

### Traditional Real Estate Parallels:

- **Location:** Near central plazas, popular areas
- **Neighbors:** Next to celebrity or brand land
- **Size:** Larger estates (combined parcels)
- **Development:** Built experiences vs. empty land

### Metaverse-Specific Factors:

- Platform active users (more users = more valuable)
- Scarcity (fixed supply of parcels)
- Utility (can you monetize the land?)

### Current Reality:

- Low user counts undermine location value
- Speculation (not utility) drives most sales

# Interoperability: The Cross-Game Asset Dream

**Vision:** NFT items usable across multiple games

## Example Scenarios:

- Sword earned in Game A usable in Game B
- Avatar skin portable across virtual worlds
- Virtual real estate accessible from multiple platforms

## Technical Challenges:

- 1 **3D model compatibility:** Different engines, formats, rigging
- 2 **Game balance:** Overpowered items from another game
- 3 **Art style coherence:** Realistic item in cartoonish game
- 4 **Legal/IP issues:** Who owns rights to item appearance?

**Reality:** Very limited interoperability, mostly within same developer ecosystem

# Why Interoperability is Hard

## Technical Barriers:

- Game engines differ (Unity, Unreal, custom)
- Asset formats incompatible (FBX, OBJ, proprietary)
- Physics and animation systems vary
- Performance constraints (mobile vs. PC)

## Economic Barriers:

- Game developers lose control over item creation
- Revenue cannibalization (items bought elsewhere)
- Balance disruption from external assets

## Limited Implementations:

- Same-developer games (e.g., Yuga Labs ecosystem)
- Simple metadata interoperability (names, IDs, not full 3D assets)



## Concerns:

- ❶ **Ponzi Tokenomics:** Most P2E models collapse without new player inflow
- ❷ **Gameplay Quality:** Focus on earning, not fun (grind-heavy)
- ❸ **High Costs:** Gas fees, NFT entry barriers deter casual players
- ❹ **Regulatory Risk:** P2E games may be classified as gambling
- ❺ **Environmental Impact:** Blockchain energy consumption (mitigated by PoS)

## Potential Solutions:

- Shift to “play-and-earn” (fun first, earn secondary)
- Deflationary tokenomics (burning mechanisms)
- Layer 2 solutions (lower gas fees)
- Free-to-play with optional NFT purchases

**Play-and-Earn:** Prioritize gameplay quality, earnings as bonus

**Contrast with P2E:**

- **P2E:** Gameplay is work, earnings primary motivation
- **Play-and-Earn:** Gameplay is fun, earnings enhance experience

**Examples:**

- **Illuvium:** AAA-quality open-world RPG with NFT creatures
- **Ember Sword:** Free-to-play MMORPG with optional NFT cosmetics
- **Guild of Guardians:** Mobile dungeon crawler with NFT heroes

**Key Insight:** Fun gameplay attracts organic users, reducing Ponzi dynamics

**Model:** Game free to play, NFTs are optional cosmetics

**Advantages:**

- No entry barrier (wide audience)
- NFTs provide status, not gameplay advantage
- Revenue from voluntary purchases (sustainable)
- Avoids pay-to-win criticism

**Challenges:**

- Lower NFT demand (cosmetic-only)
- Must compete with traditional F2P games
- NFT utility limited (resale value main draw)

**Example:** Fortnite skins as NFTs (hypothetical model)

**Guilds:** Organizations that lend NFT assets to players

## Scholarship Model:

- 1 Guild purchases NFT game assets (e.g., Axies)
- 2 Guild lends assets to players (scholars) for free
- 3 Players earn tokens through gameplay
- 4 Earnings split: 70% player, 30% guild (typical)

## Major Guilds:

- **Yield Guild Games (YGG):** Largest guild, \$1B+ assets at peak
- **Merit Circle:** DAO-governed gaming guild
- **Avocado Guild:** Latin America-focused

**Decline:** Axie collapse decimated guild revenues and valuations

## Key Concerns:

- 1 **Gambling Classification:** P2E games may violate gambling laws
- 2 **Securities Regulation:** In-game tokens may be unregistered securities
- 3 **Tax Implications:** Unrealized gains on NFT assets, earned token income
- 4 **Consumer Protection:** Minors playing P2E, predatory mechanics

## Regional Approaches:

- **Philippines:** Initially embraced, later scrutinized for tax evasion
- **China:** Banned NFT gaming (part of broader crypto ban)
- **EU/US:** Case-by-case analysis, no clear framework yet

**Industry Response:** Shift to “play-and-earn” to reduce gambling perception

## What Makes a Sustainable Blockchain Game?

- ❶ **Fun gameplay:** Intrinsically enjoyable, not just earnings
- ❷ **Sustainable tokenomics:** Balanced supply/demand, deflationary sinks
- ❸ **Low entry barrier:** Free-to-play or affordable NFTs
- ❹ **True ownership value:** NFTs provide utility beyond speculation
- ❺ **Scalability:** Layer 2 or alt-chain (low gas fees)
- ❻ **Community engagement:** Active players, not just farmers

## Examples of Resilience:

- Gods Unchained: Free-to-play card game, sustainable model
- Illuvium: High-quality RPG with deflationary token burning

- 1 Play-to-earn (P2E) models enable earning through gameplay but often resemble Ponzi schemes
- 2 Axie Infinity collapsed due to unsustainable tokenomics and unlimited SLP inflation
- 3 Virtual land NFTs (Decentraland, Sandbox) speculative, low actual usage and development
- 4 Interoperability of cross-game assets limited by technical and economic barriers
- 5 Sustainable blockchain gaming requires fun-first design and balanced token economies
- 6 Shift to play-and-earn (fun primary, earning secondary) shows more promise

- 1 Can play-to-earn gaming models ever be sustainable without Ponzi dynamics?
- 2 What would make virtual land NFTs genuinely valuable beyond speculation?
- 3 Is true cross-game interoperability achievable, or a pipe dream?
- 4 Should blockchain games focus on financialization or gameplay quality?
- 5 How can regulators balance innovation with consumer protection in P2E gaming?



### L27: Real-World Asset Tokenization

We will explore:

- RWA tokenization concept and mechanics
- Real estate tokenization platforms and legal frameworks
- Securities tokenization and compliance (Reg D, Reg S)
- Case study: BlackRock BUIDL fund (\$500M+ on-chain)
- Market size: \$50B on-chain, projected \$18T by 2033

**Preparation:** Review traditional real estate investment structures (REITs)