

SkillNexus Ecosystem Technical Whitepaper

Tokenomics, Governance, Architecture, and Decentralized Treasury Protocols

1. Executive Summary

The SkillNexus platform introduces an innovative, architecture-driven "Learn-and-Earn" paradigm designed to incentivize academic progression, daily verification streaks, curriculum milestones, and competitive peer-to-peer achievements. The foundational economic framework is sustained by two tightly coupled Solidity smart contracts: the **SkillNexusToken (SKNX)** and the **SkillNexusTreasury**.

Built upon robust, deflationary cryptographic principles, the ecosystem eliminates inflation entirely through an immutable hard cap on supply, an automated target-based transaction tax model, and an algorithmically guarded, time-locked staking infrastructure.

2. Tokenomics & Initial Supply Allocation

The SKNX token utilizes a strictly **fixed-supply model**. There are no minting functions anywhere in the deployed codebase, guaranteeing that the total supply can only decrease over time. The allocation at genesis is broken down as follows:

- **Maximum Total Supply:** 2,000,000 SKNX (with 18 decimal places).
- **Ecosystem Reserve & Reward Allocation:** 1,600,000 SKNX (80%). Transferred directly at deploy to the SkillNexusTreasury contract to back long-term user rewards, platform milestones, and staking payouts.
- **Initial Public / Liquidity Allocation:** 400,000 SKNX (20%). Allocated directly to the deployment controller for establishing market pairs.

Strategic Liquidity Provisioning Note:

To ensure long-term stability and sustainable market expansion, liquidity will be injected onto decentralized exchanges **batch-by-batch**. The initial small liquidity pool established at genesis was deployed purely to activate the smart contracts and initiate "the journey of a thousand miles with a single step." The main volume of strategic liquidity will be sequentially added soon as the ecosystem scales up operations.

3. Dynamic Trading Tax & Deflationary Model

To natively secure infrastructure sustainability, fuel the platform rewards reserve, and disincentivize volatile speculation, SKNX incorporates a **10% transaction tax** enforced atomically at the contract level.

Targeted Pair Enforcement

The transaction tax does **not** apply to standard wallet-to-wallet transfers. It is programmatically targeted: it triggers if and only if the sender (from) or the recipient (to) is a registered automated market maker (AMM) liquidity pool pair address, handled via the owner-controlled setPair system.

Tax Distribution Architecture

When a taxed DEX transaction occurs, the 10% fee (1,000 Basis Points) is mathematically split within the internal execution flow:

Target Destination	Percentage	Basis Points (BPS)	Operational Purpose
Team Wallet	5.00%	500 BPS	Continuous development, maintenance, and off-chain infrastructure expenses.
Treasury Contract	3.00%	300 BPS	Autonomously replenishes learning rewards, community incentives, and staking yield.
Burn Address	2.00%	200 BPS	Tokens are permanently destroyed (total supply decreases monotonically).
Net Recipient Amount	90.00%	9,000 BPS	The final net token balance arriving safely at the destination address.

Accounting Integrity & Exclusions

To prevent ledger desynchronization, the Treasury contract, the Team wallet, and the Initial Owner are explicitly excluded from the trading tax (isTaxExcluded). This guarantees that the Treasury contract can receive and distribute exact balances without internal ledger drift.

4. The SkillNexus Treasury: Architecture & Solvency Protocols

The SkillNexusTreasury contract functions as an autonomous financial distribution vault, balancing backend-driven micro-rewards with a user-facing fixed-term staking engine.

Learning Rewards Pipeline

Secured via a dedicated rewardOperator role, verified user accomplishments (quizzes, streaks, referrals) trigger on-chain distributions. To insulate the platform against backend compromise, native defensive boundaries are hardcoded:

- **Per-Transaction Limit:** A maximum of 2,000 SKNX can be disbursed in a single call.
- **Daily Global Cap:** A maximum of 20,000 SKNX can be distributed platform-wide per rolling 24-hour cycle.

Algorithmic Staking Over-Collateralization Guard

Users can commit capital to four distinct maturity tiers to lock in fixed incentive rates:

- **3-Month Tier (90 Days):** 1.1% Yield (11 BPS)
- **6-Month Tier (180 Days):** 1.4% Yield (14 BPS)
- **12-Month Tier (365 Days):** 1.7% Yield (17 BPS)
- **24-Month Tier (730 Days):** 2.0% Yield (20 BPS)

To completely isolate the system from potential bank-run scenarios or yield deficits, the contract enforces a strict calculation prior to accepting any new stake:

$$\textit{Free Balance} = \textit{Current Balance} - \textit{Total Outstanding Obligations}$$

The staking pool will instantly reject a user's transaction unless the following mathematical condition is true:

$$\textit{Free Balance} \geq \textit{Amount} + \textit{Reward}$$

This design enforces 100% full asset backing on both the incoming principal and the future yield obligation prior to lock-up, ensuring bulletproof structural solvency.

5. Contract Governance & Audit Benchmarks

- **Recursion Protection:** Token tax calculations bypass standard public entry points by leveraging direct parent accounting mechanisms (`super._update`), rendering the codebase immune to tax loop reentrancy.
- **Two-Step Handovers:** Administrative modifications utilize `Ownable2Step`, requiring an intentional claim sequence to prevent irreversible keys loss.
- **Emergency Circuit Breakers:** Governance-controlled pause () matrices can instantly freeze all transfers and staking operations globally during unexpected network events.