

Software Engineering Lab

Nandini Chahar (23BCE5096)

Github- <https://github.com/art3mis-n/se-project.git>

PROJECT TITLE: Blockchain-Based Skill Credentialing System (ID- 25200)

PROBLEM STATEMENT: In India's vocational education ecosystem, the current certificate issuance and verification processes suffer from significant systemic weaknesses:

1. Certificates—often issued as paper documents or centralized digital records—are vulnerable to forgery, duplication, and unauthorized alteration, undermining the credibility of vocational qualifications.
2. The verification process for credentials is manual, slow, and resource-intensive. Employers, institutions, or regulators frequently need to contact issuing bodies to confirm authenticity, leading to delays and administrative overhead.
3. There is no unified, interoperable system for credentials: certificates issued by different training institutions are stored in isolated silos, making portability and cross-institution / cross-platform recognition difficult.
4. Learners lack ownership and lifelong control over their credentials; once issued, certificates may be lost, damaged, or forgotten, reducing their long-term utility and limiting seamless sharing across stakeholders (employers, institutions, regulators).
5. These issues collectively erode trust in the authenticity and value of vocational credentials, hindering employability, employer confidence, institutional recognition, and cross-border mobility of skilled workers.

Thus, there is a pressing need for a robust, scalable, secure credentialing solution that ensures authenticity, enhances trust, and streamlines verification — addressing the core inefficiencies and fraud risk in the existing system.

DESCRIPTION: The Blockchain-Based Skill Credentialing System aims to secure and streamline credential issuance in India's vocational education ecosystem. Current paper-based and centralized digital certificates are vulnerable to forgery, loss, and inefficiency, while verification remains slow and resource-intensive. The absence of a unified, interoperable platform further limits portability and cross-institution recognition.

This project leverages blockchain technology to create a decentralized, tamper-proof credentialing network. Authorized training institutions can issue verifiable digital certificates, while learners maintain lifelong ownership through secure digital wallets. Employers and regulators can instantly confirm authenticity through on-chain verification, removing intermediaries and delays. By integrating smart contracts and decentralized identities, the system ensures authenticity, transparency, and scalability, strengthening trust in vocational qualifications and enhancing employability across sectors.

SOURCES: Ministry of Skill Development and Entrepreneurship (MSDE) in association with National Council for Vocational Education and Training (NCVET)

<https://sih.gov.in/sih2025PS>