

# Shortcomings Documentation: Classroom Equipment Checkout System

This section documents known limitations in the current system's design regarding security, administration, and usability. These points represent high-priority areas for future development and refinement.

## 1. Security and Access Control Deficiencies

The current architecture lacks granular control and auditability, presenting potential risks:

- **No Admin/Superuser Segregation:** The system appears to only have one user role (student) with external management done through direct database access via phpMyAdmin. There is no distinction between a general staff user (a lab technician checking inventory) and a superadmin (a system manager). Granting full database access to all administrative staff is a severe security risk and makes accountability impossible.
- **Missing Audit Logging:** The system lacks a logging system to track administrative actions. There is no record of who checked out, returned, or, most critically, modified a device record or transaction record. This makes tracing errors or abuse extremely difficult.
- **Password Storage Transparency:** While the test credentials are provided, there is no explicit mention that the student password in the student table is hashed and salted. If passwords are not properly hashed, a database breach would expose all user passwords.

## 2. Administrative and System Management Limitations

The platform relies heavily on manual, out-of-system processes for key administrative tasks:

- **Reliance on phpMyAdmin for Core Management:** All management of the core datasets (devices, student, transactions) requires direct access to phpMyAdmin. This is not user-friendly, requires SQL knowledge, and is highly prone to human error.
  - **Inability to Manage Student Accounts:** Staff cannot reset passwords, disable accounts, or manage student data (block a student with overdue equipment) without using phpMyAdmin.
  - **Inability to Manage Devices:** Staff cannot add new devices, retire old ones, or edit device details (like description or location) within the application itself.
- **Lack of Reporting/Analytics:** The system lacks a generate report page or dashboard metrics. Staff cannot easily view reports on equipment utilization rates, high-demand items, or student compliance history without running manual SQL queries.

## 3. Usability and Student Experience Issues

The user interface lacks features that would prevent errors and improve the borrowing experience:

- Missing Transaction History on Student Login: While the student can view "My Items," the system may not provide a comprehensive history of all past transactions (items borrowed and returned last semester), limiting accountability for the student.
- No Advanced Equipment Filtering: Students must manually browse the equipment list. The system lacks search bars or filtering options (filter by category like "Camera" or "Laptop"), making it difficult to find specific items in a large inventory.
- Redundant 2FA in Development: The note stating that "Any 6-digit code will work for 2FA" in development mode is a potential vulnerability if this flag is accidentally left active in a production deployment, completely defeating the purpose of two-factor authentication.