**Functional Requirements**

**1. User Authentication and Access Control**

FR1.1: The system shall allow **parents** to create and log into their accounts using a secure login system.

FR1.2: Upon successful login, parents shall be required to verify their identity through a second verification step (e.g., OTP or security question) before accessing their own dashboard.

FR1.3: After a parent's initial login, the system shall allow access to the **pupil’s dedicated page**.

FR1.4: **Teachers** and the **principal** shall be able to log in and be redirected to their respective dashboards without a second verification step.

**2. Parent Portal**

FR2.1: The parent dashboard shall display the pupil’s attendance records, grades, submitted assignments, and quiz performance.

FR2.2: Parents shall be able to view detailed feedback given by teachers.

FR2.3: Parents shall be able to send and receive messages to/from teachers.

FR2.4: Parents shall have access to school-wide announcements.

**3. Pupil Portal**

FR3.1: Pupils shall be able to access all their enrolled classes through their dashboard.

FR3.2: Pupils shall be able to view/download learning materials (PDFs, videos, images, etc.) if allowed by the teacher.

FR3.3: Pupils shall be able to complete and submit assignments and quizzes.

FR3.4: Pupils shall be able to receive feedback and grades for their submissions.

FR3.5: Pupils shall see a list of all their classes, clearly showing due assignments, upcoming quizzes, and announcements.

**4. Teacher Portal**

FR4.1: Teachers shall be able to create class proposals which require **principal approval** before becoming active.

FR4.2: Teachers shall be able to assign pupils to their classes once approved.

FR4.3: Teachers shall be able to upload learning materials in multiple formats (PDF, DOC, MP4, etc.).

FR4.4: Teachers shall be able to create and manage assignments and quizzes.

FR4.5: Teachers shall be able to take attendance for their classes.

FR4.6: Teachers shall be able to grade pupil work and provide individual feedback.

FR4.7: Teachers shall be able to send and receive messages with parents and pupils.

**5. Principal Portal**

FR5.1: The principal shall have access to all user accounts (pupils, parents, and teachers).

FR5.2: The principal shall be able to create, update, or delete any user account.

FR5.3: The principal shall review and approve class creation requests from teachers.

FR5.4: The principal shall monitor teacher performance (based on class engagement, grading, feedback frequency, etc.).

FR5.5: The principal shall be able to post school-wide announcements visible to all users.

**Non-Functional Requirements**

**1. Performance**

NFR1.1: The system shall support concurrent access by at least 500 users without performance degradation.

NFR1.2: The system shall load user dashboards within 3 seconds on average.

**2. Security**

NFR2.1: The system shall implement secure login using hashed passwords.

NFR2.2: Parent accounts shall implement a second-factor authentication system before full access.

NFR2.3: All user data shall be transmitted over HTTPS to ensure encryption in transit.

NFR2.4: Different roles (parent, pupil, teacher, principal) shall have properly restricted access based on permissions.

**3. Usability**

NFR3.1: The system interface shall be user-friendly and accessible to non-technical users.

NFR3.2: The system shall support responsive design to be usable on tablets and smartphones.

NFR3.3: Pupils and parents shall be able to access all relevant information in no more than three clicks.

**4. Maintainability**

NFR4.1: The system shall be modular and support future feature additions with minimal disruption.

NFR4.2: The system codebase shall be documented to allow for easier updates and debugging.

**5. Reliability**

NFR5.1: The system shall be available 99.5% of the time during school hours.

NFR5.2: The system shall auto-save pupil submissions to prevent data loss.

**6. Data Integrity**

NFR6.1: The system shall validate all data inputs (e.g., dates, grades) before saving to the database.

NFR6.2: The system shall log all changes to pupil records, including who made the change and when.