

Malawian Online Secondary School - Database Schema

Core User Management Tables

users

sql

```
CREATE TABLE users (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  uuid VARCHAR(36) UNIQUE NOT NULL,  
  first_name VARCHAR(100) NOT NULL,  
  last_name VARCHAR(100) NOT NULL,  
  email VARCHAR(255) UNIQUE NOT NULL,  
  phone VARCHAR(20),  
  password VARCHAR(255) NOT NULL,  
  role ENUM('admin', 'teacher', 'student') NOT NULL,  
  avatar VARCHAR(255),  
  date_of_birth DATE,  
  gender ENUM('male', 'female'),  
  address TEXT,  
  city VARCHAR(100),  
  district VARCHAR(100), -- Malawi districts  
  region ENUM('Northern', 'Central', 'Southern'), -- Malawi regions  
  email_verified_at TIMESTAMP NULL,  
  is_active BOOLEAN DEFAULT TRUE,  
  last_login_at TIMESTAMP NULL,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP  
);
```

user_profiles

sql

```
CREATE TABLE user_profiles (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  user_id BIGINT NOT NULL,  
  bio TEXT,  
  school_name VARCHAR(200), -- For students: their physical school  
  qualification TEXT, -- For teachers  
  experience_years INT, -- For teachers  
  subjects_of_interest JSON, -- Array of subject IDs  
  preferred_language ENUM('english', 'chichewa') DEFAULT 'english',  
  timezone VARCHAR(50) DEFAULT 'Africa/Blantyre',  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
  FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE CASCADE  
);
```

Academic Structure Tables

academic_years

```
sql  
  
CREATE TABLE academic_years (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  name VARCHAR(50) NOT NULL, -- e.g., "2024-2025"  
  start_date DATE NOT NULL,  
  end_date DATE NOT NULL,  
  is_active BOOLEAN DEFAULT FALSE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP  
);
```

terms

```
sql
```

```
CREATE TABLE terms (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  academic_year_id BIGINT NOT NULL,  
  name VARCHAR(50) NOT NULL, -- Term 1, Term 2, Term 3  
  start_date DATE NOT NULL,  
  end_date DATE NOT NULL,  
  is_active BOOLEAN DEFAULT FALSE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
  FOREIGN KEY (academic_year_id) REFERENCES academic_years(id) ON DELETE CASCADE  
);
```

forms

```
sql  
  
CREATE TABLE forms (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  name VARCHAR(50) NOT NULL, -- Form 1, Form 2, Form 3, Form 4  
  level INT NOT NULL, -- 1, 2, 3, 4  
  description TEXT,  
  is_active BOOLEAN DEFAULT TRUE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP  
);
```

subjects

```
sql  
  
CREATE TABLE subjects (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  name VARCHAR(100) NOT NULL,  
  code VARCHAR(20) UNIQUE NOT NULL, -- e.g., "MATH", "ENG", "BIO"  
  description TEXT,  
  cover_image VARCHAR(255),  
  preview_video VARCHAR(255), -- URL to preview video  
  is_compulsory BOOLEAN DEFAULT FALSE,  
  is_active BOOLEAN DEFAULT TRUE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP  
);
```

form_subjects

```
sql
```

```
CREATE TABLE form_subjects (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  form_id BIGINT NOT NULL,  
  subject_id BIGINT NOT NULL,  
  is_compulsory BOOLEAN DEFAULT FALSE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  FOREIGN KEY (form_id) REFERENCES forms(id) ON DELETE CASCADE,  
  FOREIGN KEY (subject_id) REFERENCES subjects(id) ON DELETE CASCADE,  
  UNIQUE KEY unique_form_subject (form_id, subject_id)  
);
```

topics

```
sql  
  
CREATE TABLE topics (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  subject_id BIGINT NOT NULL,  
  form_id BIGINT NOT NULL,  
  title VARCHAR(200) NOT NULL,  
  description TEXT,  
  order_index INT NOT NULL DEFAULT 0,  
  estimated_duration_hours DECIMAL(4,2), -- e.g., 2.5 hours  
  difficulty_level ENUM('beginner', 'intermediate', 'advanced') DEFAULT 'beginner',  
  prerequisites JSON, -- Array of topic IDs that should be completed first  
  is_active BOOLEAN DEFAULT TRUE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
  FOREIGN KEY (subject_id) REFERENCES subjects(id) ON DELETE CASCADE,  
  FOREIGN KEY (form_id) REFERENCES forms(id) ON DELETE CASCADE  
);
```

Content Management Tables

video_lessons

```
sql
```

```
CREATE TABLE video_lessons (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  topic_id BIGINT NOT NULL,  
  teacher_id BIGINT NOT NULL,  
  title VARCHAR(200) NOT NULL,  
  description TEXT,  
  video_url VARCHAR(500) NOT NULL,  
  thumbnail VARCHAR(255),  
  duration_seconds INT,  
  is_preview BOOLEAN DEFAULT FALSE, -- Free preview lessons  
  order_index INT NOT NULL DEFAULT 0,  
  views_count INT DEFAULT 0,  
  is_active BOOLEAN DEFAULT TRUE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
  FOREIGN KEY (topic_id) REFERENCES topics(id) ON DELETE CASCADE,  
  FOREIGN KEY (teacher_id) REFERENCES users(id) ON DELETE CASCADE  
);
```

lesson_attachments

sql

```
CREATE TABLE lesson_attachments (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  lesson_id BIGINT NOT NULL,  
  name VARCHAR(200) NOT NULL,  
  file_path VARCHAR(500) NOT NULL,  
  file_size BIGINT,  
  mime_type VARCHAR(100),  
  type ENUM('pdf', 'document', 'image', 'audio', 'other') NOT NULL,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  FOREIGN KEY (lesson_id) REFERENCES video_lessons(id) ON DELETE CASCADE  
);
```

live_sessions

sql

```

CREATE TABLE live_sessions (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  teacher_id BIGINT NOT NULL,
  subject_id BIGINT NOT NULL,
  form_id BIGINT NOT NULL,
  topic_id BIGINT NULL,
  title VARCHAR(200) NOT NULL,
  description TEXT,
  scheduled_at DATETIME NOT NULL,
  duration_minutes INT NOT NULL DEFAULT 60,
  meeting_url VARCHAR(500),
  meeting_id VARCHAR(100),
  password VARCHAR(50),
  max_participants INT DEFAULT 100,
  status ENUM('scheduled', 'live', 'completed', 'cancelled') DEFAULT 'scheduled',
  recording_url VARCHAR(500),
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  FOREIGN KEY (teacher_id) REFERENCES users(id) ON DELETE CASCADE,
  FOREIGN KEY (subject_id) REFERENCES subjects(id) ON DELETE CASCADE,
  FOREIGN KEY (form_id) REFERENCES forms(id) ON DELETE CASCADE,
  FOREIGN KEY (topic_id) REFERENCES topics(id) ON DELETE SET NULL
);

```

live_session_participants

```

sql

CREATE TABLE live_session_participants (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  session_id BIGINT NOT NULL,
  student_id BIGINT NOT NULL,
  joined_at DATETIME NULL,
  left_at DATETIME NULL,
  attended BOOLEAN DEFAULT FALSE,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  FOREIGN KEY (session_id) REFERENCES live_sessions(id) ON DELETE CASCADE,
  FOREIGN KEY (student_id) REFERENCES users(id) ON DELETE CASCADE,
  UNIQUE KEY unique_session_student (session_id, student_id)
);

```

Pricing and Subscription Tables

subscription_plans

```

sql

```

```
CREATE TABLE subscription_plans (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  name VARCHAR(100) NOT NULL,  
  description TEXT,  
  type ENUM('subject', 'form', 'full_access') NOT NULL,  
  duration_months INT NOT NULL,  
  price DECIMAL(10,2) NOT NULL,  
  currency VARCHAR(3) DEFAULT 'MWK', -- Malawian Kwacha  
  features JSON, -- Array of features included  
  is_popular BOOLEAN DEFAULT FALSE,  
  is_active BOOLEAN DEFAULT TRUE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP  
);
```

subject_pricing

```
sql  
  
CREATE TABLE subject_pricing (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  subject_id BIGINT NOT NULL,  
  form_id BIGINT NOT NULL,  
  plan_id BIGINT NOT NULL,  
  price DECIMAL(10,2) NOT NULL,  
  discount_percentage DECIMAL(5,2) DEFAULT 0,  
  is_active BOOLEAN DEFAULT TRUE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
  FOREIGN KEY (subject_id) REFERENCES subjects(id) ON DELETE CASCADE,  
  FOREIGN KEY (form_id) REFERENCES forms(id) ON DELETE CASCADE,  
  FOREIGN KEY (plan_id) REFERENCES subscription_plans(id) ON DELETE CASCADE,  
  UNIQUE KEY unique_subject_form_plan (subject_id, form_id, plan_id)  
);
```

student_subscriptions

```
sql
```

```
CREATE TABLE student_subscriptions (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  student_id BIGINT NOT NULL,
  plan_id BIGINT NOT NULL,
  subject_id BIGINT NULL, -- NULL for full access plans
  form_id BIGINT NULL,
  start_date DATE NOT NULL,
  end_date DATE NOT NULL,
  amount_paid DECIMAL(10,2) NOT NULL,
  payment_method VARCHAR(50),
  status ENUM('active', 'expired', 'cancelled', 'pending') DEFAULT 'pending',
  auto_renewal BOOLEAN DEFAULT FALSE,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  FOREIGN KEY (student_id) REFERENCES users(id) ON DELETE CASCADE,
  FOREIGN KEY (plan_id) REFERENCES subscription_plans(id) ON DELETE CASCADE,
  FOREIGN KEY (subject_id) REFERENCES subjects(id) ON DELETE SET NULL,
  FOREIGN KEY (form_id) REFERENCES forms(id) ON DELETE SET NULL
);
```

payment_methods

sql

```
CREATE TABLE payment_methods (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  name VARCHAR(100) NOT NULL,
  code VARCHAR(50) UNIQUE NOT NULL,
  type ENUM('mobile_money', 'bank', 'other') NOT NULL,
  logo VARCHAR(255) NULL,
  instructions TEXT NULL, -- Payment instructions for users
  account_details JSON NULL, -- Store account numbers, names, etc.
  is_active BOOLEAN DEFAULT TRUE,
  order_index INT DEFAULT 0,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP
);
```

payments

sql


```

CREATE TABLE payments (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  subscription_id BIGINT NOT NULL,
  student_id BIGINT NOT NULL,
  payment_method_id BIGINT NOT NULL,
  amount DECIMAL(10,2) NOT NULL,
  currency VARCHAR(3) DEFAULT 'MWK',
  reference_number VARCHAR(100) NOT NULL, -- Student provides this (transaction ID from their end)
  admin_reference VARCHAR(100) NULL, -- Admin adds this after verification
  sender_name VARCHAR(200) NOT NULL, -- Name of person who sent money
  sender_phone VARCHAR(20) NULL, -- Phone number used for mobile money
  payment_date DATE NOT NULL, -- When student claims they paid
  payment_time TIME NULL, -- Time of payment if provided
  notes TEXT NULL, -- Additional notes from student
  admin_notes TEXT NULL, -- Admin verification notes
  status ENUM('pending', 'verified', 'rejected', 'refunded') DEFAULT 'pending',
  verified_by BIGINT NULL, -- Admin who verified the payment
  verified_at DATETIME NULL,
  rejection_reason TEXT NULL,
  proof_of_payment VARCHAR(500) NULL, -- File path to uploaded proof
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  FOREIGN KEY (subscription_id) REFERENCES student_subscriptions(id) ON DELETE CASCADE,
  FOREIGN KEY (student_id) REFERENCES users(id) ON DELETE CASCADE,
  FOREIGN KEY (payment_method_id) REFERENCES payment_methods(id) ON DELETE RESTRICT,
  FOREIGN KEY (verified_by) REFERENCES users(id) ON DELETE SET NULL
);

```

Assessment Tables

quizzes

sql

```
CREATE TABLE quizzes (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  topic_id BIGINT NOT NULL,
  teacher_id BIGINT NOT NULL,
  title VARCHAR(200) NOT NULL,
  description TEXT,
  instructions TEXT,
  duration_minutes INT NOT NULL DEFAULT 30,
  total_marks INT NOT NULL DEFAULT 0,
  passing_marks INT NOT NULL DEFAULT 0,
  max_attempts INT DEFAULT 3,
  randomize_questions BOOLEAN DEFAULT TRUE,
  show_results_after ENUM('submission', 'closing_date', 'never') DEFAULT 'submission',
  available_from DATETIME NULL,
  available_until DATETIME NULL,
  is_active BOOLEAN DEFAULT TRUE,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  FOREIGN KEY (topic_id) REFERENCES topics(id) ON DELETE CASCADE,
  FOREIGN KEY (teacher_id) REFERENCES users(id) ON DELETE CASCADE
);
```

quiz_questions

sql

```
CREATE TABLE quiz_questions (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  quiz_id BIGINT NOT NULL,
  question_text TEXT NOT NULL,
  question_type ENUM('multiple_choice', 'true_false', 'short_answer', 'essay') NOT NULL,
  marks INT NOT NULL DEFAULT 1,
  order_index INT NOT NULL DEFAULT 0,
  explanation TEXT, -- Shown after answering
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  FOREIGN KEY (quiz_id) REFERENCES quizzes(id) ON DELETE CASCADE
);
```

quiz_question_options

sql

```
CREATE TABLE quiz_question_options (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  question_id BIGINT NOT NULL,  
  option_text TEXT NOT NULL,  
  is_correct BOOLEAN DEFAULT FALSE,  
  order_index INT NOT NULL DEFAULT 0,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  FOREIGN KEY (question_id) REFERENCES quiz_questions(id) ON DELETE CASCADE  
);
```

quiz_attempts

sql

```
CREATE TABLE quiz_attempts (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  quiz_id BIGINT NOT NULL,  
  student_id BIGINT NOT NULL,  
  attempt_number INT NOT NULL DEFAULT 1,  
  started_at DATETIME NOT NULL,  
  completed_at DATETIME NULL,  
  score DECIMAL(5,2) NULL,  
  total_marks INT NULL,  
  percentage DECIMAL(5,2) NULL,  
  status ENUM('in_progress', 'completed', 'abandoned') DEFAULT 'in_progress',  
  time_taken_seconds INT NULL,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
  FOREIGN KEY (quiz_id) REFERENCES quizzes(id) ON DELETE CASCADE,  
  FOREIGN KEY (student_id) REFERENCES users(id) ON DELETE CASCADE  
);
```

quiz_answers

sql

```
CREATE TABLE quiz_answers (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  attempt_id BIGINT NOT NULL,
  question_id BIGINT NOT NULL,
  selected_option_id BIGINT NULL, -- For multiple choice/true-false
  answer_text TEXT NULL, -- For short answer/essay
  is_correct BOOLEAN NULL,
  marks_awarded DECIMAL(5,2) DEFAULT 0,
  teacher_feedback TEXT NULL,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  FOREIGN KEY (attempt_id) REFERENCES quiz_attempts(id) ON DELETE CASCADE,
  FOREIGN KEY (question_id) REFERENCES quiz_questions(id) ON DELETE CASCADE,
  FOREIGN KEY (selected_option_id) REFERENCES quiz_question_options(id) ON DELETE SET NULL
);
```

assignments

sql

```
CREATE TABLE assignments (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  topic_id BIGINT NOT NULL,
  teacher_id BIGINT NOT NULL,
  title VARCHAR(200) NOT NULL,
  description TEXT NOT NULL,
  instructions TEXT,
  total_marks INT NOT NULL DEFAULT 100,
  due_date DATETIME NOT NULL,
  submission_type ENUM('file_upload', 'text', 'both') DEFAULT 'both',
  allowed_file_types JSON, -- Array of allowed extensions
  max_file_size_mb INT DEFAULT 10,
  late_submission_allowed BOOLEAN DEFAULT TRUE,
  late_penalty_per_day DECIMAL(5,2) DEFAULT 0,
  is_active BOOLEAN DEFAULT TRUE,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  FOREIGN KEY (topic_id) REFERENCES topics(id) ON DELETE CASCADE,
  FOREIGN KEY (teacher_id) REFERENCES users(id) ON DELETE CASCADE
);
```

assignment_submissions

sql

```
CREATE TABLE assignment_submissions (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  assignment_id BIGINT NOT NULL,
  student_id BIGINT NOT NULL,
  submission_text TEXT NULL,
  submitted_at DATETIME NOT NULL,
  is_late BOOLEAN DEFAULT FALSE,
  status ENUM('submitted', 'graded', 'returned') DEFAULT 'submitted',
  marks_awarded DECIMAL(5,2) NULL,
  teacher_feedback TEXT NULL,
  graded_at DATETIME NULL,
  graded_by BIGINT NULL,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  FOREIGN KEY (assignment_id) REFERENCES assignments(id) ON DELETE CASCADE,
  FOREIGN KEY (student_id) REFERENCES users(id) ON DELETE CASCADE,
  FOREIGN KEY (graded_by) REFERENCES users(id) ON DELETE SET NULL,
  UNIQUE KEY unique_assignment_student (assignment_id, student_id)
);
```

assignment_files

sql

```
CREATE TABLE assignment_files (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  submission_id BIGINT NOT NULL,
  original_name VARCHAR(255) NOT NULL,
  file_path VARCHAR(500) NOT NULL,
  file_size BIGINT NOT NULL,
  mime_type VARCHAR(100) NOT NULL,
  uploaded_at DATETIME DEFAULT CURRENT_TIMESTAMP,
  FOREIGN KEY (submission_id) REFERENCES assignment_submissions(id) ON DELETE CASCADE
);
```

Student Progress Tables

student_progress

sql

```
CREATE TABLE student_progress (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  student_id BIGINT NOT NULL,  
  topic_id BIGINT NOT NULL,  
  status ENUM('not_started', 'in_progress', 'completed') DEFAULT 'not_started',  
  completion_percentage DECIMAL(5,2) DEFAULT 0,  
  time_spent_seconds INT DEFAULT 0,  
  first_accessed_at DATETIME NULL,  
  last_accessed_at DATETIME NULL,  
  completed_at DATETIME NULL,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
  FOREIGN KEY (student_id) REFERENCES users(id) ON DELETE CASCADE,  
  FOREIGN KEY (topic_id) REFERENCES topics(id) ON DELETE CASCADE,  
  UNIQUE KEY unique_student_topic (student_id, topic_id)  
);
```

lesson_progress

sql

```
CREATE TABLE lesson_progress (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  student_id BIGINT NOT NULL,  
  lesson_id BIGINT NOT NULL,  
  watch_time_seconds INT DEFAULT 0,  
  completion_percentage DECIMAL(5,2) DEFAULT 0,  
  is_completed BOOLEAN DEFAULT FALSE,  
  last_position_seconds INT DEFAULT 0,  
  first_watched_at DATETIME NULL,  
  last_watched_at DATETIME NULL,  
  completed_at DATETIME NULL,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
  FOREIGN KEY (student_id) REFERENCES users(id) ON DELETE CASCADE,  
  FOREIGN KEY (lesson_id) REFERENCES video_lessons(id) ON DELETE CASCADE,  
  UNIQUE KEY unique_student_lesson (student_id, lesson_id)  
);
```

student_grades

sql

```
CREATE TABLE student_grades (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  student_id BIGINT NOT NULL,
  subject_id BIGINT NOT NULL,
  form_id BIGINT NOT NULL,
  term_id BIGINT NOT NULL,
  academic_year_id BIGINT NOT NULL,
  assignment_average DECIMAL(5,2) NULL,
  quiz_average DECIMAL(5,2) NULL,
  participation_score DECIMAL(5,2) NULL,
  final_grade DECIMAL(5,2) NULL,
  letter_grade ENUM('A', 'B', 'C', 'D', 'E', 'F') NULL,
  teacher_comments TEXT NULL,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  FOREIGN KEY (student_id) REFERENCES users(id) ON DELETE CASCADE,
  FOREIGN KEY (subject_id) REFERENCES subjects(id) ON DELETE CASCADE,
  FOREIGN KEY (form_id) REFERENCES forms(id) ON DELETE CASCADE,
  FOREIGN KEY (term_id) REFERENCES terms(id) ON DELETE CASCADE,
  FOREIGN KEY (academic_year_id) REFERENCES academic_years(id) ON DELETE CASCADE,
  UNIQUE KEY unique_student_subject_term (student_id, subject_id, term_id)
);
```

Community and Communication Tables

forum_categories

```
sql

CREATE TABLE forum_categories (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  name VARCHAR(100) NOT NULL,
  description TEXT,
  color VARCHAR(7) DEFAULT '#3B82F6', -- Hex color code
  icon VARCHAR(50) DEFAULT 'chat',
  order_index INT NOT NULL DEFAULT 0,
  is_active BOOLEAN DEFAULT TRUE,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP
);
```

forum_topics

```
sql
```

```

CREATE TABLE forum_topics (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  category_id BIGINT NOT NULL,
  subject_id BIGINT NULL, -- Optional subject association
  form_id BIGINT NULL, -- Optional form association
  user_id BIGINT NOT NULL,
  title VARCHAR(200) NOT NULL,
  content TEXT NOT NULL,
  is_pinned BOOLEAN DEFAULT FALSE,
  is_locked BOOLEAN DEFAULT FALSE,
  views_count INT DEFAULT 0,
  replies_count INT DEFAULT 0,
  last_reply_at DATETIME NULL,
  last_reply_by BIGINT NULL,
  is_active BOOLEAN DEFAULT TRUE,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  FOREIGN KEY (category_id) REFERENCES forum_categories(id) ON DELETE CASCADE,
  FOREIGN KEY (subject_id) REFERENCES subjects(id) ON DELETE SET NULL,
  FOREIGN KEY (form_id) REFERENCES forms(id) ON DELETE SET NULL,
  FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE CASCADE,
  FOREIGN KEY (last_reply_by) REFERENCES users(id) ON DELETE SET NULL
);

```

forum_replies

```

sql

CREATE TABLE forum_replies (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  topic_id BIGINT NOT NULL,
  user_id BIGINT NOT NULL,
  parent_id BIGINT NULL, -- For nested replies
  content TEXT NOT NULL,
  is_solution BOOLEAN DEFAULT FALSE,
  likes_count INT DEFAULT 0,
  is_active BOOLEAN DEFAULT TRUE,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  FOREIGN KEY (topic_id) REFERENCES forum_topics(id) ON DELETE CASCADE,
  FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE CASCADE,
  FOREIGN KEY (parent_id) REFERENCES forum_replies(id) ON DELETE CASCADE
);

```

forum_likes

sql

```
CREATE TABLE forum_likes (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  user_id BIGINT NOT NULL,  
  likeable_type ENUM('topic', 'reply') NOT NULL,  
  likeable_id BIGINT NOT NULL,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE CASCADE,  
  UNIQUE KEY unique_user_like (user_id, likeable_type, likeable_id)  
);
```

private_messages

sql

```
CREATE TABLE private_messages (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  sender_id BIGINT NOT NULL,  
  recipient_id BIGINT NOT NULL,  
  subject VARCHAR(200) NOT NULL,  
  content TEXT NOT NULL,  
  is_read BOOLEAN DEFAULT FALSE,  
  read_at DATETIME NULL,  
  is_deleted_by_sender BOOLEAN DEFAULT FALSE,  
  is_deleted_by_recipient BOOLEAN DEFAULT FALSE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
  FOREIGN KEY (sender_id) REFERENCES users(id) ON DELETE CASCADE,  
  FOREIGN KEY (recipient_id) REFERENCES users(id) ON DELETE CASCADE  
);
```

System and Notification Tables

notifications

sql

```
CREATE TABLE notifications (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  user_id BIGINT NOT NULL,  
  type VARCHAR(50) NOT NULL,  
  title VARCHAR(200) NOT NULL,  
  message TEXT NOT NULL,  
  data JSON NULL, -- Additional data for the notification  
  is_read BOOLEAN DEFAULT FALSE,  
  read_at DATETIME NULL,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE CASCADE  
);
```

system_settings

```
sql  
  
CREATE TABLE system_settings (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  key_name VARCHAR(100) UNIQUE NOT NULL,  
  value TEXT NOT NULL,  
  description TEXT NULL,  
  type ENUM('string', 'number', 'boolean', 'json') DEFAULT 'string',  
  is_public BOOLEAN DEFAULT FALSE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP  
);
```

activity_logs

```
sql  
  
CREATE TABLE activity_logs (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  user_id BIGINT NULL,  
  action VARCHAR(100) NOT NULL,  
  description TEXT NULL,  
  model_type VARCHAR(100) NULL, -- e.g., 'User', 'Quiz', 'Assignment'  
  model_id BIGINT NULL,  
  ip_address VARCHAR(45) NULL,  
  user_agent TEXT NULL,  
  changes JSON NULL, -- Store what changed  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE SET NULL  
);
```

teacher_subject_assignments

sql

```
CREATE TABLE teacher_subject_assignments (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  teacher_id BIGINT NOT NULL,  
  subject_id BIGINT NOT NULL,  
  form_id BIGINT NOT NULL,  
  assigned_at DATETIME DEFAULT CURRENT_TIMESTAMP,  
  is_active BOOLEAN DEFAULT TRUE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  FOREIGN KEY (teacher_id) REFERENCES users(id) ON DELETE CASCADE,  
  FOREIGN KEY (subject_id) REFERENCES subjects(id) ON DELETE CASCADE,  
  FOREIGN KEY (form_id) REFERENCES forms(id) ON DELETE CASCADE,  
  UNIQUE KEY unique_teacher_subject_form (teacher_id, subject_id, form_id)  
);
```

Indexes for Performance

sql

-- User-related indexes

```
CREATE INDEX idx_users_role ON users(role);  
CREATE INDEX idx_users_email ON users(email);  
CREATE INDEX idx_users_is_active ON users(is_active);
```

-- Content-related indexes

```
CREATE INDEX idx_video_lessons_topic ON video_lessons(topic_id);  
CREATE INDEX idx_video_lessons_teacher ON video_lessons(teacher_id);  
CREATE INDEX idx_topics_subject_form ON topics(subject_id, form_id);
```

-- Progress tracking indexes

```
CREATE INDEX idx_student_progress_student ON student_progress(student_id);  
CREATE INDEX idx_lesson_progress_student ON lesson_progress(student_id);
```

-- Assessment indexes

```
CREATE INDEX idx_quiz_attempts_student ON quiz_attempts(student_id);  
CREATE INDEX idx_quiz_attempts_quiz ON quiz_attempts(quiz_id);
```

-- Subscription indexes

```
CREATE INDEX idx_student_subscriptions_student ON student_subscriptions(student_id);  
CREATE INDEX idx_student_subscriptions_status ON student_subscriptions(status);
```

-- Forum indexes

```
CREATE INDEX idx_forum_topics_category ON forum_topics(category_id);  
CREATE INDEX idx_forum_replies_topic ON forum_replies(topic_id);
```

-- Frontend content management indexes

```
CREATE INDEX idx_website_settings_section ON website_settings(section);  
CREATE INDEX idx_section_items_section ON section_items(section_id);  
CREATE INDEX idx_navigation_menu_items_menu ON navigation_menu_items(menu_id);  
CREATE INDEX idx_testimonials_status_featured ON testimonials(status, is_featured);  
CREATE INDEX idx_faqs_category_active ON faqs(category, is_active);  
CREATE INDEX idx_media_library_type ON media_library(file_type);  
CREATE INDEX idx_announcements_active_dates ON announcements(is_active, start_date, end_date);
```

-- Date-based indexes

```
CREATE INDEX idx_live_sessions_scheduled ON live_sessions(scheduled_at);  
CREATE INDEX idx_assignments_due_date ON assignments(due_date);  
CREATE INDEX idx_quizzes_available_from ON quizzes(available_from);
```

-- Payment-related indexes

```
CREATE INDEX idx_payments_status ON payments(status);  
CREATE INDEX idx_payments_student ON payments(student_id);  
CREATE INDEX idx_payments_method ON payments(payment_method_id);  
CREATE INDEX idx_payments_verification ON payments(verified_by);
```

```
CREATE INDEX idx_payment_notifications_recipient ON payment_notifications(recipient_type, recipient_id);  
CREATE INDEX idx_manual_payment_logs_payment ON manual_payment_logs(payment_id);
```

Initial Data Seeds

sql

-- Insert default forms

INSERT INTO forms (name, level, description) VALUES

('Form 1', 1, 'First year of secondary education'),
('Form 2', 2, 'Second year of secondary education'),
('Form 3', 3, 'Third year of secondary education'),
('Form 4', 4, 'Fourth year of secondary education - MSCE preparation');

-- Insert common subjects

INSERT INTO subjects (name, code, description, is_compulsory) VALUES

('English', 'ENG', 'English Language and Literature', true),
('Mathematics', 'MATH', 'Pure Mathematics', true),
('Chichewa', 'CHI', 'Chichewa Language', true),
('Biology', 'BIO', 'Biological Sciences', false),
('Chemistry', 'CHEM', 'Chemical Sciences', false),
('Physics', 'PHYS', 'Physical Sciences', false),
('Geography', 'GEO', 'Physical and Human Geography', false),
('History', 'HIST', 'Malawian and World History', false),
('Civic Education', 'CIV', 'Citizenship and Government', false),
('Agriculture', 'AGR', 'Agricultural Sciences', false),
('Life Skills', 'LIFE', 'Life Skills Education', false),
('Religious Studies', 'REL', 'Religious and Moral Education', false),
('French', 'FRE', 'French Language', false),
('Computer Studies', 'COMP', 'Information and Communication Technology', false);

-- Insert forum categories

INSERT INTO forum_categories (name, description, icon, order_index) VALUES

('General Discussion', 'General topics and introductions', 'chat', 1),
('Academic Help', 'Get help with your studies', 'help-circle', 2),
('Study Groups', 'Form and join study groups', 'users', 3),
('MSCE Preparation', 'Malawi School Certificate of Education preparation', 'award', 4),
('Technical Support', 'Get help with the platform', 'settings', 5),
('Career Guidance', 'Discuss future career paths and opportunities', 'briefcase', 6),
('News and Announcements', 'Official school announcements and news', 'megaphone', 7);

-- Insert default website settings for homepage

INSERT INTO website_settings (section, key_name, title, content, content_type, order_index) VALUES

-- Hero Section

('hero', 'main_title', 'Hero Main Title', 'Quality Education for Every Malawian Student', 'text', 1),
('hero', 'subtitle', 'Hero Subtitle', 'Access world-class secondary education from anywhere in Malawi. Learn from certified',
('hero', 'background_image', 'Hero Background', '/images/malawi-students-hero.jpg', 'image', 3),
('hero', 'cta_primary_text', 'Primary CTA', 'Start Learning Today', 'text', 4),
('hero', 'cta_secondary_text', 'Secondary CTA', 'View Subjects', 'text', 5),
('hero', 'video_preview', 'Preview Video', '/videos/school-preview.mp4', 'video', 6),

-- About Section

('about', 'title', 'About Title', 'About Malawi Online Secondary School', 'text', 1),

('about', 'description', 'About Description', 'We are committed to providing quality secondary education to students across Malawi', 'text', 1),
('about', 'mission', 'Mission Statement', 'To make quality secondary education accessible to every Malawian student, regardless of location', 'text', 2),
('about', 'vision', 'Vision Statement', 'A Malawi where every student has access to excellent secondary education that prepares them for the future', 'text', 3);

-- Features Section

('features', 'title', 'Features Title', 'Why Choose Our School?', 'text', 1),
('features', 'subtitle', 'Features Subtitle', 'Comprehensive online education designed for Malawian students', 'text', 2),
('features', 'bullet_points', 'Features Bullet Points', 'Our features include:', 'text', 3);

-- Stats Section

('stats', 'title', 'Stats Title', 'Our Impact in Numbers', 'text', 1),
('stats', 'students_count', 'Students Enrolled', '1500', 'number', 2),
('stats', 'subjects_count', 'Subjects Available', '14', 'number', 3),
('stats', 'teachers_count', 'Qualified Teachers', '25', 'number', 4),
('stats', 'success_rate', 'MSCE Success Rate', '85', 'number', 5),
('stats', 'testimonials_count', 'Student Testimonials', '10', 'number', 6);

-- Contact Section

('contact', 'title', 'Contact Title', 'Get in Touch', 'text', 1),
('contact', 'description', 'Contact Description', 'Have questions? We are here to help you succeed in your educational journey.', 'text', 2),
('contact', 'form_fields', 'Contact Form Fields', 'Name, Email, Message', 'text', 3);

-- Footer

('footer', 'description', 'Footer Description', 'Malawi Online Secondary School - Quality education for every Malawian student.', 'text', 1),
('footer', 'copyright', 'Copyright Text', '© 2024 Malawi Online Secondary School. All rights reserved.', 'text', 2);

-- Insert default landing page sections

INSERT INTO landing_page_sections (name, title, subtitle, section_type, order_index, is_visible) VALUES
('hero', 'Hero Section', 'Main banner with call-to-action', 'hero', 1, TRUE),
('features', 'Features', 'Why choose our school', 'features', 2, TRUE),
('subjects', 'Our Subjects', 'Available courses and pricing', 'subjects', 3, TRUE),
('stats', 'Statistics', 'Our impact in numbers', 'stats', 4, TRUE),
('testimonials', 'Student Success Stories', 'What our students say', 'testimonials', 5, TRUE),
('pricing', 'Pricing Plans', 'Affordable education packages', 'pricing', 6, TRUE),
('about', 'About Us', 'Our mission and vision', 'about', 7, TRUE),
('faq', 'Frequently Asked Questions', 'Common questions answered', 'faq', 8, TRUE),
('contact', 'Contact Us', 'Get in touch with us', 'contact', 9, TRUE);

-- Insert navigation menus

INSERT INTO navigation_menus (name, location, is_active) VALUES
('Main Menu', 'header', TRUE),
('Footer Links', 'footer', TRUE),
('Mobile Menu', 'mobile', TRUE);

-- Insert main navigation items

INSERT INTO navigation_menu_items (menu_id, title, url, order_index, is_active) VALUES
(1, 'Home', '/', 1, TRUE),
(1, 'Subjects', '/subjects', 2, TRUE),
(1, 'Pricing', '/pricing', 3, TRUE),
(1, 'About', '/about', 4, TRUE),
(1, 'Contact', '/contact', 5, TRUE),
(1, 'FAQ', '/faq', 6, TRUE);

```
(1, 'Contact', '/contact', 5, TRUE),
(1, 'Login', '/login', 6, TRUE),
(1, 'Register', '/register', 7, TRUE);
```

-- Insert footer navigation items

```
INSERT INTO navigation_menu_items (menu_id, title, url, order_index, is_active) VALUES
```

```
(2, 'Privacy Policy', '/privacy', 1, TRUE),
(2, 'Terms of Service', '/terms', 2, TRUE),
(2, 'Support', '/support', 3, TRUE),
(2, 'FAQ', '/faq', 4, TRUE);
```

-- Insert sample testimonials

```
INSERT INTO testimonials (name, role, school, location, content, rating, is_featured, status) VALUES
```

```
('Chisomo Banda', 'Form 4 Student', 'Lilongwe Secondary School', 'Lilongwe', 'This platform helped me understand Chemistry better.', 5, TRUE, 'active'),
('Grace Mwale', 'Form 3 Student', 'Blantyre Girls Secondary', 'Blantyre', 'I love the interactive quizzes and the way I can learn at my own pace.', 4, TRUE, 'active'),
('Joseph Phiri', 'Parent', NULL, 'Mzuzu', 'My daughter has been using this platform for 6 months now. Her confidence in her studies has improved significantly.', 5, FALSE, 'active');
```

-- Insert FAQ categories and questions

```
INSERT INTO faqs (category, question, answer, order_index, is_featured) VALUES
```

```
('Payment', 'What payment methods do you accept?', 'We accept Airtel Money, TNM Mpamba, and bank transfers from Malawi Bank.', 1, TRUE),
('Payment', 'How long does payment verification take?', 'Payment verification typically takes 2-4 hours during business hours.', 2, FALSE),
('Academic', 'Are the teachers qualified?', 'Yes, all our teachers are qualified with teaching degrees and experience in Malawian schools.', 3, TRUE),
('Academic', 'Can I access lessons offline?', 'Currently, our platform requires internet connection. However, you can download PDF materials for offline use.', 4, FALSE),
('Technical', 'What internet speed do I need?', 'We recommend a minimum of 1Mbps for video lessons. Our platform is optimized for low-speed connections.', 5, TRUE),
('Technical', 'Can I use my phone to access lessons?', 'Yes! Our platform works on smartphones, tablets, and computers.', 6, FALSE);
```

-- Insert social media links

```
INSERT INTO social_media_links (platform, username, url, icon, color, order_index) VALUES
```

```
('facebook', 'MalawiOnlineSchool', 'https://facebook.com/MalawiOnlineSchool', 'facebook', '#1877F2', 1),
('twitter', 'MalawiSchoolOnl', 'https://twitter.com/MalawiSchoolOnl', 'twitter', '#1DA1F2', 2),
('youtube', 'MalawiOnlineSecondary', 'https://youtube.com/@MalawiOnlineSecondary', 'youtube', '#FF0000', 3),
('whatsapp', NULL, 'https://wa.me/265995123456', 'whatsapp', '#25D366', 4);
```

-- Insert contact information

```
INSERT INTO contact_information (type, label, value, icon, is_primary, order_index) VALUES
```

```
('phone', 'Primary Phone', '+265 995 123 456', 'phone', TRUE, 1),
('phone', 'Alternative Phone', '+265 885 123 456', 'phone', FALSE, 2),
('email', 'General Inquiries', 'info@malawionilineschool.mw', 'mail', TRUE, 1),
('email', 'Academic Support', 'academic@malawionilineschool.mw', 'mail', FALSE, 2),
('email', 'Technical Support', 'tech@malawionilineschool.mw', 'mail', FALSE, 3),
('address', 'Head Office', 'Area 47, Sector 2, Lilongwe, Malawi', 'map-pin', TRUE, 1),
('whatsapp', 'WhatsApp Support', '+265 995 123 456', 'whatsapp', FALSE, 1),
('hours', 'Business Hours', 'Monday - Friday: 8:00 AM - 5:00 PM, Saturday: 9:00 AM - 1:00 PM', 'clock', FALSE, 1);
```

-- Insert default theme

```
INSERT INTO theme_settings (name, display_name, primary_color, secondary_color, accent_color, is_active) VALUES
```

```
('default', 'Default Theme', '#3B82F6', '#1E40AF', '#F59E0B', TRUE);
```


-- Insert sample announcement

INSERT INTO announcements (title, content, type, target_audience, display_location, is_active, created_by, start_date, end_date) VALUES ('Welcome to Malawi Online Secondary School!', 'Join thousands of students already learning with us. Register today and start learning now.', 'announcement', 'all', 'header', true, 'admin', '2023-01-01', '2023-12-31');

INSERT INTO payment_methods (name, code, type, instructions, account_details, order_index) VALUES ('Airtel Money', 'airtel_money', 'mobile_money', 'Send money to the number below and provide the transaction reference number. Make sure to use the exact amount.', JSON_OBJECT('account_number', '0995123456', 'account_name', 'Malawi Online School', 'business_name', 'Malawi Online Secondary School'), 1);

INSERT INTO payment_methods (name, code, type, instructions, account_details, order_index) VALUES ('TNM Mpamba', 'tnm_mpamba', 'mobile_money', 'Send money using Mpamba to the number below. After sending, provide the transaction ID and your phone number.', JSON_OBJECT('account_number', '0885123456', 'account_name', 'Malawi Online School', 'business_name', 'Malawi Online Secondary School'), 2);

INSERT INTO payment_methods (name, code, type, instructions, account_details, order_index) VALUES ('National Bank of Malawi', 'nbm', 'bank', 'Deposit money to our NBM account. You can deposit at any NBM branch or use NBM mobile banking. Please provide your account details.', JSON_OBJECT('account_number', '1234567890', 'account_name', 'Malawi Online Secondary School', 'bank_name', 'National Bank of Malawi', 'branch', 'City Centre Branch', 'swift_code', 'NBMAMWMW'), 3);

INSERT INTO payment_methods (name, code, type, instructions, account_details, order_index) VALUES ('Standard Bank Malawi', 'standard_bank', 'bank', 'Deposit money to our Standard Bank account. You can deposit at any Standard Bank branch or use Standard Bank mobile banking. Please provide your account details.', JSON_OBJECT('account_number', '9876543210', 'account_name', 'Malawi Online Secondary School', 'bank_name', 'Standard Bank Malawi', 'branch', 'City Centre Branch', 'swift_code', 'SBLMML2333'), 4);

'Transfer money to our Standard Bank account. Use internet banking or visit any Standard Bank branch. Reference yo

JSON_OBJECT(

'account_number', '9876543210',

'account_name', 'Malawi Online Secondary School',

'bank_name', 'Standard Bank Malawi Limited',

'branch', 'Victoria Avenue',

'sort_code', '001001'

),

4

),

(

'First Capital Bank',

'fcb',

'bank',

'Deposit or transfer to our FCB account. You can use FCB mobile app, internet banking, or visit any FCB branch.',

JSON_OBJECT(

'account_number', '5555666677',

'account_name', 'Malawi Online Secondary School',

'bank_name', 'First Capital Bank',

'branch', 'Blantyre Branch'

),

5

),

(

'FDH Bank',

'fdh_bank',

'bank',

'Transfer to our FDH Bank account using FDH mobile banking, internet banking, or branch deposit.',

JSON_OBJECT(

'account_number', '8888999900',

'account_name', 'Malawi Online Secondary School',

'bank_name', 'FDH Bank Limited',

'branch', 'Lilongwe Branch'

),

6

);

INSERT INTO subscription_plans (name, description, type, duration_months, price, features) VALUES

('Single Subject - Monthly', 'Access to one subject for one month', 'subject', 1, 2500.00, '['Video lessons', 'Quizzes', 'As

('Single Subject - Termly', 'Access to one subject for one term (4 months)', 'subject', 4, 8000.00, '['Video lessons', "Quizz

('Form Package - Monthly', 'Access to all subjects for your form level', 'form', 1, 15000.00, '['All subjects for form', "Vide

('Form Package - Termly', 'Access to all subjects for your form level (4 months)', 'form', 4, 50000.00, '['All subjects for for

('Full Access - Yearly', 'Complete access to all forms and subjects', 'full_access', 12, 180000.00, '['All subjects all forms', "

-- Insert system settings

INSERT INTO system_settings (key_name, value, description, type, is_public) VALUES

('site_name', 'Malawi Online Secondary School', 'The name of the school platform', 'string', true),

('site_currency', 'MWK', 'Default currency for pricing', 'string', true),

```
('max_video_upload_size', '500', 'Maximum video upload size in MB', 'number', false),
('session_duration_default', '60', 'Default live session duration in minutes', 'number', false),
('quiz_max_attempts_default', '3', 'Default maximum quiz attempts', 'number', false),
('forum_posts_per_page', '20', 'Number of forum posts per page', 'number', true),
('enable_mobile_money', 'true', 'Enable mobile money payments', 'boolean', false),
('maintenance_mode', 'false', 'Enable maintenance mode', 'boolean', false),
('payment_verification_required', 'true', 'Require admin verification for all payments', 'boolean', false),
('auto_activate_subscriptions', 'false', 'Automatically activate subscriptions after payment verification', 'boolean', false),
('payment_proof_required', 'true', 'Require proof of payment upload', 'boolean', false),
('payment_timeout_hours', '48', 'Hours to wait for payment verification before marking as expired', 'number', false),
('enable_multilingual', 'true', 'Enable Chichewa/English language switching', 'boolean', true),
('default_language', 'en', 'Default website language', 'string', true),
('enable_testimonials', 'true', 'Show testimonials on homepage', 'boolean', true),
('max_testimonial_display', '6', 'Maximum testimonials to show on homepage', 'number', true),
('enable_live_chat', 'false', 'Enable live chat support', 'boolean', true),
('google_analytics_id', '', 'Google Analytics tracking ID', 'string', false),
('facebook_pixel_id', '', 'Facebook Pixel ID for tracking', 'string', false);
```

Frontend Content Management Tables

website_settings

```
sql

CREATE TABLE website_settings (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  section VARCHAR(100) NOT NULL, -- e.g., 'hero', 'about', 'features', 'footer'
  key_name VARCHAR(100) NOT NULL,
  title VARCHAR(200) NULL,
  content LONGTEXT NULL,
  content_type ENUM('text', 'html', 'json', 'image', 'video', 'url', 'color', 'number') DEFAULT 'text',
  media_url VARCHAR(500) NULL,
  alt_text VARCHAR(200) NULL,
  order_index INT DEFAULT 0,
  is_active BOOLEAN DEFAULT TRUE,
  is_translatable BOOLEAN DEFAULT FALSE,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  INDEX idx_website_settings_section_key (section, key_name),
  UNIQUE KEY unique_section_key (section, key_name)
);
```

website_translations

```
sql
```

```
CREATE TABLE website_translations (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  website_setting_id BIGINT NOT NULL,
  language_code VARCHAR(10) NOT NULL, -- 'en', 'ny' (Chichewa)
  title VARCHAR(200) NULL,
  content LONGTEXT NULL,
  alt_text VARCHAR(200) NULL,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  FOREIGN KEY (website_setting_id) REFERENCES website_settings(id) ON DELETE CASCADE,
  UNIQUE KEY unique_setting_language (website_setting_id, language_code)
);
```

landing_page_sections

```
sql

CREATE TABLE landing_page_sections (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  name VARCHAR(100) NOT NULL,
  title VARCHAR(200) NOT NULL,
  subtitle TEXT NULL,
  content LONGTEXT NULL,
  background_image VARCHAR(500) NULL,
  background_color VARCHAR(7) DEFAULT '#ffffff',
  text_color VARCHAR(7) DEFAULT '#000000',
  section_type ENUM('hero', 'features', 'subjects', 'testimonials', 'pricing', 'about', 'contact', 'stats', 'cta', 'faq') NOT NULL,
  layout ENUM('default', 'centered', 'left_aligned', 'right_aligned', 'grid', 'carousel') DEFAULT 'default',
  is_visible BOOLEAN DEFAULT TRUE,
  order_index INT NOT NULL DEFAULT 0,
  css_classes VARCHAR(500) NULL,
  custom_css TEXT NULL,
  animation ENUM('none', 'fade_in', 'slide_up', 'slide_left', 'slide_right', 'zoom_in') DEFAULT 'fade_in',
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP
);
```

section_items

```
sql
```

```
CREATE TABLE section_items (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  section_id BIGINT NOT NULL,  
  title VARCHAR(200) NOT NULL,  
  subtitle VARCHAR(300) NULL,  
  description TEXT NULL,  
  image VARCHAR(500) NULL,  
  icon VARCHAR(100) NULL, -- For icon-based items  
  link_url VARCHAR(500) NULL,  
  link_text VARCHAR(100) NULL,  
  button_style ENUM('primary', 'secondary', 'outline', 'ghost', 'link') DEFAULT 'primary',  
  price DECIMAL(10,2) NULL,  
  original_price DECIMAL(10,2) NULL,  
  discount_percentage INT NULL,  
  metadata JSON NULL, -- Store additional data like stats, features, etc.  
  is_featured BOOLEAN DEFAULT FALSE,  
  order_index INT DEFAULT 0,  
  is_active BOOLEAN DEFAULT TRUE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
  FOREIGN KEY (section_id) REFERENCES landing_page_sections(id) ON DELETE CASCADE  
);
```

navigation_menus

sql

```
CREATE TABLE navigation_menus (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  name VARCHAR(100) NOT NULL,  
  location ENUM('header', 'footer', 'sidebar', 'mobile') NOT NULL,  
  is_active BOOLEAN DEFAULT TRUE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP  
);
```

navigation_menu_items

sql

```

CREATE TABLE navigation_menu_items (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  menu_id BIGINT NOT NULL,
  parent_id BIGINT NULL,
  title VARCHAR(100) NOT NULL,
  url VARCHAR(500) NULL,
  route_name VARCHAR(100) NULL, -- For internal routes
  icon VARCHAR(100) NULL,
  target ENUM('_self', '_blank') DEFAULT '_self',
  css_classes VARCHAR(200) NULL,
  permissions JSON NULL, -- Which user roles can see this item
  order_index INT DEFAULT 0,
  is_active BOOLEAN DEFAULT TRUE,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  FOREIGN KEY (menu_id) REFERENCES navigation_menus(id) ON DELETE CASCADE,
  FOREIGN KEY (parent_id) REFERENCES navigation_menu_items(id) ON DELETE CASCADE
);

```

testimonials

sql

```

CREATE TABLE testimonials (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  name VARCHAR(200) NOT NULL,
  role VARCHAR(100) NULL, -- e.g., "Form 4 Student", "Parent", "Teacher"
  school VARCHAR(200) NULL,
  location VARCHAR(100) NULL,
  avatar VARCHAR(500) NULL,
  rating INT DEFAULT 5, -- 1-5 star rating
  title VARCHAR(200) NULL,
  content TEXT NOT NULL,
  video_url VARCHAR(500) NULL, -- For video testimonials
  is_featured BOOLEAN DEFAULT FALSE,
  is_verified BOOLEAN DEFAULT FALSE,
  status ENUM('pending', 'approved', 'rejected') DEFAULT 'pending',
  order_index INT DEFAULT 0,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP
);

```

faqs

sql

```
CREATE TABLE faqs (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  category VARCHAR(100) NOT NULL, -- e.g., "Payment", "Technical", "Academic"  
  question TEXT NOT NULL,  
  answer LONGTEXT NOT NULL,  
  order_index INT DEFAULT 0,  
  is_featured BOOLEAN DEFAULT FALSE,  
  views_count INT DEFAULT 0,  
  is_active BOOLEAN DEFAULT TRUE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP  
);
```

social_media_links

sql

```
CREATE TABLE social_media_links (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  platform VARCHAR(50) NOT NULL, -- facebook, twitter, instagram, youtube, etc.  
  username VARCHAR(100) NULL,  
  url VARCHAR(500) NOT NULL,  
  icon VARCHAR(100) NULL,  
  color VARCHAR(7) NULL, -- Brand color  
  order_index INT DEFAULT 0,  
  is_active BOOLEAN DEFAULT TRUE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP  
);
```

media_library

sql

```

CREATE TABLE media_library (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  title VARCHAR(200) NOT NULL,
  filename VARCHAR(255) NOT NULL,
  original_filename VARCHAR(255) NOT NULL,
  file_path VARCHAR(500) NOT NULL,
  file_size BIGINT NOT NULL,
  mime_type VARCHAR(100) NOT NULL,
  file_type ENUM('image', 'video', 'audio', 'document') NOT NULL,
  alt_text VARCHAR(200) NULL,
  description TEXT NULL,
  width INT NULL, -- For images/videos
  height INT NULL, -- For images/videos
  duration INT NULL, -- For videos/audio in seconds
  uploaded_by BIGINT NOT NULL,
  folder VARCHAR(200) DEFAULT 'general',
  tags JSON NULL, -- Array of tags for easy searching
  is_public BOOLEAN DEFAULT TRUE,
  usage_count INT DEFAULT 0, -- Track how many times this media is used
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  FOREIGN KEY (uploaded_by) REFERENCES users(id) ON DELETE CASCADE,
  INDEX idx_media_type_folder (file_type, folder)
);

```

theme_settings

```

sql

```



```
CREATE TABLE theme_settings (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  name VARCHAR(100) UNIQUE NOT NULL,  
  display_name VARCHAR(200) NOT NULL,  
  primary_color VARCHAR(7) NOT NULL DEFAULT '#3B82F6',  
  secondary_color VARCHAR(7) NOT NULL DEFAULT '#1E40AF',  
  accent_color VARCHAR(7) NOT NULL DEFAULT '#F59E0B',  
  success_color VARCHAR(7) NOT NULL DEFAULT '#10B981',  
  warning_color VARCHAR(7) NOT NULL DEFAULT '#F59E0B',  
  error_color VARCHAR(7) NOT NULL DEFAULT '#EF4444',  
  background_color VARCHAR(7) NOT NULL DEFAULT '#FFFFFF',  
  text_color VARCHAR(7) NOT NULL DEFAULT '#1F2937',  
  primary_font VARCHAR(100) DEFAULT 'Inter',  
  heading_font VARCHAR(100) DEFAULT 'Inter',  
  font_size_base VARCHAR(10) DEFAULT '16px',  
  border_radius VARCHAR(10) DEFAULT '8px',  
  shadow_style VARCHAR(50) DEFAULT 'soft',  
  button_style VARCHAR(50) DEFAULT 'rounded',  
  custom_css LONGTEXT NULL,  
  is_active BOOLEAN DEFAULT FALSE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP  
);
```

announcements

sql

```

CREATE TABLE announcements (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  title VARCHAR(200) NOT NULL,
  content TEXT NOT NULL,
  type ENUM('info', 'success', 'warning', 'error', 'maintenance') DEFAULT 'info',
  background_color VARCHAR(7) NULL,
  text_color VARCHAR(7) NULL,
  icon VARCHAR(100) NULL,
  link_url VARCHAR(500) NULL,
  link_text VARCHAR(100) NULL,
  target_audience ENUM('all', 'students', 'teachers', 'parents', 'guests') DEFAULT 'all',
  display_location ENUM('top_bar', 'modal', 'banner', 'sidebar') DEFAULT 'banner',
  start_date DATETIME NULL,
  end_date DATETIME NULL,
  is_dismissible BOOLEAN DEFAULT TRUE,
  priority INT DEFAULT 0, -- Higher priority shows first
  is_active BOOLEAN DEFAULT TRUE,
  created_by BIGINT NOT NULL,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  FOREIGN KEY (created_by) REFERENCES users(id) ON DELETE CASCADE
);

```

contact_information

sql

```

CREATE TABLE contact_information (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  type ENUM('phone', 'email', 'address', 'whatsapp', 'social', 'hours', 'other') NOT NULL,
  label VARCHAR(100) NOT NULL,
  value TEXT NOT NULL,
  icon VARCHAR(100) NULL,
  is_primary BOOLEAN DEFAULT FALSE,
  order_index INT DEFAULT 0,
  is_public BOOLEAN DEFAULT TRUE,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP
);

```

certificates

sql

```

CREATE TABLE certificates (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  student_id BIGINT NOT NULL,
  subject_id BIGINT NOT NULL,
  form_id BIGINT NOT NULL,
  certificate_type ENUM('completion', 'achievement', 'excellence') NOT NULL,
  title VARCHAR(200) NOT NULL,
  description TEXT,
  issued_date DATE NOT NULL,
  certificate_number VARCHAR(50) UNIQUE NOT NULL,
  grade DECIMAL(5,2) NULL,
  template_data JSON, -- Store certificate template information
  file_path VARCHAR(500) NULL, -- Generated PDF path
  is_active BOOLEAN DEFAULT TRUE,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  FOREIGN KEY (student_id) REFERENCES users(id) ON DELETE CASCADE,
  FOREIGN KEY (subject_id) REFERENCES subjects(id) ON DELETE CASCADE,
  FOREIGN KEY (form_id) REFERENCES forms(id) ON DELETE CASCADE
);

```

student_notes

sql

```

CREATE TABLE student_notes (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  student_id BIGINT NOT NULL,
  lesson_id BIGINT NOT NULL,
  content TEXT NOT NULL,
  timestamp_seconds INT NULL, -- Position in video where note was taken
  is_private BOOLEAN DEFAULT TRUE,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  FOREIGN KEY (student_id) REFERENCES users(id) ON DELETE CASCADE,
  FOREIGN KEY (lesson_id) REFERENCES video_lessons(id) ON DELETE CASCADE
);

```

bookmarks

sql

```
CREATE TABLE bookmarks (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  user_id BIGINT NOT NULL,  
  bookmarkable_type ENUM('lesson', 'topic', 'quiz', 'assignment') NOT NULL,  
  bookmarkable_id BIGINT NOT NULL,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE CASCADE,  
  UNIQUE KEY unique_user_bookmark (user_id, bookmarkable_type, bookmarkable_id)  
);
```

study_streaks

```
sql  
  
CREATE TABLE study_streaks (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  student_id BIGINT NOT NULL,  
  current_streak INT DEFAULT 0,  
  longest_streak INT DEFAULT 0,  
  last_activity_date DATE NULL,  
  total_study_days INT DEFAULT 0,  
  streak_start_date DATE NULL,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
  FOREIGN KEY (student_id) REFERENCES users(id) ON DELETE CASCADE,  
  UNIQUE KEY unique_student_streak (student_id)  
);
```

achievements

```
sql  
  
CREATE TABLE achievements (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  name VARCHAR(100) NOT NULL,  
  description TEXT NOT NULL,  
  icon VARCHAR(100) NOT NULL,  
  type ENUM('streak', 'completion', 'grade', 'participation', 'social') NOT NULL,  
  criteria JSON NOT NULL, -- Conditions to unlock achievement  
  points INT DEFAULT 0,  
  badge_color VARCHAR(7) DEFAULT '#3B82F6',  
  is_active BOOLEAN DEFAULT TRUE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP  
);
```

user_achievements

sql

```
CREATE TABLE user_achievements (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  user_id BIGINT NOT NULL,  
  achievement_id BIGINT NOT NULL,  
  earned_at DATETIME DEFAULT CURRENT_TIMESTAMP,  
  progress_data JSON NULL, -- Store progress towards achievement  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE CASCADE,  
  FOREIGN KEY (achievement_id) REFERENCES achievements(id) ON DELETE CASCADE,  
  UNIQUE KEY unique_user_achievement (user_id, achievement_id)  
);
```

parent_student_relations

sql

```
CREATE TABLE parent_student_relations (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  parent_email VARCHAR(255) NOT NULL,  
  parent_name VARCHAR(200) NOT NULL,  
  parent_phone VARCHAR(20),  
  student_id BIGINT NOT NULL,  
  relationship ENUM('parent', 'guardian', 'relative') NOT NULL,  
  is_primary_contact BOOLEAN DEFAULT FALSE,  
  can_view_progress BOOLEAN DEFAULT TRUE,  
  can_receive_notifications BOOLEAN DEFAULT TRUE,  
  verified_at DATETIME NULL,  
  verification_token VARCHAR(100) NULL,  
  is_active BOOLEAN DEFAULT TRUE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
  FOREIGN KEY (student_id) REFERENCES users(id) ON DELETE CASCADE  
);
```

parent_notifications

sql

```
CREATE TABLE parent_notifications (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  parent_relation_id BIGINT NOT NULL,  
  type VARCHAR(50) NOT NULL,  
  title VARCHAR(200) NOT NULL,  
  message TEXT NOT NULL,  
  data JSON NULL,  
  is_read BOOLEAN DEFAULT FALSE,  
  sent_via ENUM('email', 'sms', 'both') DEFAULT 'email',  
  sent_at DATETIME NULL,  
  read_at DATETIME NULL,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  FOREIGN KEY (parent_relation_id) REFERENCES parent_student_relations(id) ON DELETE CASCADE  
);
```

discussion_threads

```
sql  
  
CREATE TABLE discussion_threads (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  lesson_id BIGINT NOT NULL,  
  user_id BIGINT NOT NULL,  
  parent_id BIGINT NULL,  
  content TEXT NOT NULL,  
  timestamp_seconds INT NULL, -- Position in video where discussion started  
  likes_count INT DEFAULT 0,  
  replies_count INT DEFAULT 0,  
  is_pinned BOOLEAN DEFAULT FALSE,  
  is_active BOOLEAN DEFAULT TRUE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
  FOREIGN KEY (lesson_id) REFERENCES video_lessons(id) ON DELETE CASCADE,  
  FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE CASCADE,  
  FOREIGN KEY (parent_id) REFERENCES discussion_threads(id) ON DELETE CASCADE  
);
```

payment_notifications

```
sql
```

```
CREATE TABLE payment_notifications (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  payment_id BIGINT NOT NULL,
  recipient_type ENUM('student', 'admin') NOT NULL,
  recipient_id BIGINT NOT NULL,
  type ENUM('payment_submitted', 'payment_verified', 'payment_rejected', 'verification_required') NOT NULL,
  title VARCHAR(200) NOT NULL,
  message TEXT NOT NULL,
  is_read BOOLEAN DEFAULT FALSE,
  sent_at DATETIME DEFAULT CURRENT_TIMESTAMP,
  read_at DATETIME NULL,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  FOREIGN KEY (payment_id) REFERENCES payments(id) ON DELETE CASCADE,
  FOREIGN KEY (recipient_id) REFERENCES users(id) ON DELETE CASCADE
);
```

discussion_likes

sql

```
CREATE TABLE discussion_likes (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  user_id BIGINT NOT NULL,
  thread_id BIGINT NOT NULL,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE CASCADE,
  FOREIGN KEY (thread_id) REFERENCES discussion_threads(id) ON DELETE CASCADE,
  UNIQUE KEY unique_user_thread_like (user_id, thread_id)
);
```

sql

```
CREATE TABLE discussion_likes (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  user_id BIGINT NOT NULL,
  thread_id BIGINT NOT NULL,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  FOREIGN KEY (user_id) REFERENCES users(id) ON DELETE CASCADE,
  FOREIGN KEY (thread_id) REFERENCES discussion_threads(id) ON DELETE CASCADE,
  UNIQUE KEY unique_user_thread_like (user_id, thread_id)
);
```

content_reports

sql

```
CREATE TABLE content_reports (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  reporter_id BIGINT NOT NULL,  
  reported_content_type ENUM('lesson', 'forum_topic', 'forum_reply', 'discussion_thread') NOT NULL,  
  reported_content_id BIGINT NOT NULL,  
  reason ENUM('inappropriate', 'spam', 'harassment', 'copyright', 'other') NOT NULL,  
  description TEXT,  
  status ENUM('pending', 'reviewed', 'resolved', 'dismissed') DEFAULT 'pending',  
  reviewed_by BIGINT NULL,  
  reviewed_at DATETIME NULL,  
  resolution_notes TEXT NULL,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,  
  FOREIGN KEY (reporter_id) REFERENCES users(id) ON DELETE CASCADE,  
  FOREIGN KEY (reviewed_by) REFERENCES users(id) ON DELETE SET NULL  
);
```

email_templates

sql

```
CREATE TABLE email_templates (  
  id BIGINT PRIMARY KEY AUTO_INCREMENT,  
  name VARCHAR(100) UNIQUE NOT NULL,  
  subject VARCHAR(200) NOT NULL,  
  body TEXT NOT NULL,  
  variables JSON, -- Available template variables  
  type ENUM('system', 'marketing', 'transactional') DEFAULT 'system',  
  is_active BOOLEAN DEFAULT TRUE,  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP  
);
```

email_queue

sql


```
CREATE TABLE email_queue (
  id BIGINT PRIMARY KEY AUTO_INCREMENT,
  recipient_email VARCHAR(255) NOT NULL,
  recipient_name VARCHAR(200),
  subject VARCHAR(200) NOT NULL,
  body TEXT NOT NULL,
  template_id BIGINT NULL,
  template_data JSON NULL,
  priority ENUM('low', 'normal', 'high') DEFAULT 'normal',
  status ENUM('pending', 'sending', 'sent', 'failed') DEFAULT 'pending',
  attempts INT DEFAULT 0,
  max_attempts INT DEFAULT 3,
  error_message TEXT NULL,
  scheduled_at DATETIME NULL,
  sent_at DATETIME NULL,
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
  updated_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
  FOREIGN KEY (template_id) REFERENCES email_templates(id) ON DELETE SET NULL
);
```

Sample Laravel Model Relationships

Here are some key Laravel model relationships you'll need:

User Model Relationships:

- `hasOne(UserProfile::class)`
- `hasMany(StudentSubscription::class, 'student_id')` (when role is student)
- `hasMany(VideoLesson::class, 'teacher_id')` (when role is teacher)
- `hasMany(LiveSession::class, 'teacher_id')` (when role is teacher)
- `belongsToMany(Subject::class, 'teacher_subject_assignments')` (when role is teacher)

Subject Model Relationships:

- `hasMany(Topic::class)`
- `belongsToMany(Form::class, 'form_subjects')`
- `hasMany(SubjectPricing::class)`
- `belongsToMany(User::class, 'teacher_subject_assignments')`

Topic Model Relationships:

- `belongsTo(Subject::class)`
- `belongsTo(Form::class)`

- hasMany(VideoLesson::class)
- hasMany(Quiz::class)
- hasMany(Assignment::class)

Key Features Supported:

1. **Multi-role System:** Admin, Teachers, Students with proper permissions
2. **Malawi-specific Localization:** Districts, regions, currency (MWK)
3. **Flexible Pricing:** Subject-based, form-based, or full access subscriptions
4. **Content Management:** Videos with previews, topics, lessons, attachments
5. **Assessment System:** Quizzes, assignments, grading, progress tracking
6. **Live Sessions:** Scheduled classes with participant tracking
7. **Community Features:** Forums, discussions, private messaging
8. **Parent Integration:** Progress monitoring and notifications
9. **Gamification:** Achievements, streaks, certificates, bookmarks
10. **Payment Integration:** Multiple payment methods including mobile money
11. **Content Moderation:** Reporting system for inappropriate content
12. **Email System:** Templates and queue for notifications
13. **Analytics Ready:** Activity logs and comprehensive tracking

This database schema provides a solid foundation for your Malawian online secondary school platform with all the features you requested. The structure is optimized for performance with proper indexes and follows Laravel conventions for easy implementation.