**SDG PROBLEM DEFINITION DOCUMENT**

1. **SDG Selection and Problem Definition**

**SDG Selection:** Quality Education in Kenya (focusing on counties).

**Problem Definition:** The problem identified is the disparity in access to quality education across different counties in Kenya. Factors contributing to this disparity include the availability of trained teachers, infrastructure, and access to learning materials. The aim is to use data to identify counties with the most significant gaps and suggest areas for improvement.

1. **ERD DESIGN**

In this ERD design, we have five key entities: **County**, **School**, **Teacher**, **Infrastructure**, and **LearningMaterial**.

**1. County**

* **Attributes:**
  + **county\_id** (Primary Key): A unique identifier for each county.
  + **county\_name**: The name of the county.
  + **population**: The population of the county.
  + **literacy\_rate**: The literacy rate of the county (percentage of the population who can read and write).
* **Relationships:**
  + A **County** has many **Schools** (One-to-Many). Each county can have multiple schools, but each school belongs to one county.

**2. School**

* **Attributes:**
  + **school\_id** (Primary Key): A unique identifier for each school.
  + **school\_name**: The name of the school.
  + **county\_id** (Foreign Key): References the county to which the school belongs.
  + **type**: Specifies whether the school is **Primary** or **Secondary**.
  + **number\_of\_teachers**: The number of teachers employed at the school.
  + **number\_of\_students**: The total number of students enrolled in the school.
* **Relationships:**
  + A **School** belongs to a **County** (Many-to-One relationship).
  + A **School** has many **Teachers** (One-to-Many).
  + A **School** has one or more **Infrastructure** records (One-to-Many).
  + A **School** has one or more **LearningMaterials** (One-to-Many).

**3. Teacher**

* **Attributes:**
  + **teacher\_id** (Primary Key): A unique identifier for each teacher.
  + **teacher\_name**: The name of the teacher.
  + **type** (Foreign Key): References the school at which the teacher works.
  + **qualification**: The qualification level of the teacher (e.g., Bachelor’s, Master’s, etc.).
  + **years\_of\_experience**: The number of years the teacher has been teaching.
* **Relationships:**
  + A **Teacher** belongs to a **School** (Many-to-One relationship).

**4. Infrastructure**

* **Attributes:**
  + **infrastructure\_id** (Primary Key): A unique identifier for each infrastructure record.
  + **type** (Foreign Key): References the school to which the infrastructure belongs.
  + **classrooms**: The number of classrooms available at the school.
  + **libraries**: The number of libraries available at the school.
  + **laboratories**: The number of laboratories available at the school.
* **Relationships:**
  + **Infrastructure** belongs to a **School** (Many-to-One relationship).

**5. LearningMaterial**

* **Attributes:**
  + **material\_id** (Primary Key): A unique identifier for each learning material record.
  + **school\_id** (Foreign Key): References the school to which the learning material belongs.
  + **textbooks**: The number of textbooks available at the school.
  + **computers**: The number of computers available for learning.
  + **learning\_kits**: The number of learning kits (such as science kits) available.
* **Relationships:**
  + **LearningMaterial** belongs to a **School** (Many-to-One relationship).

1. **INTEGRATION DOCUMENTATION**

**Step 1: Prepare the Data in MySQL Workbench**

Before exporting data from MySQL Workbench to Excel, ensure that your data is clean and consistent within the MySQL database. This involves:

* Checking for any duplicate entries or inconsistent data
* Ensuring all required fields are filled
* Verifying data types and formats are correct
* Running any necessary queries to clean up the data

**Step 2: Export Data from MySQL Workbench**

To export data from MySQL Workbench to Excel:

1. Open MySQL Workbench and connect to your database
2. Select the schema and table(s) you want to export
3. Right-click on the table and select "Table Data Export Wizard"
4. Choose CSV as the export format
5. Select the fields you want to export
6. Specify the file path and name for the exported CSV file
7. Click "Export" to generate the CSV file