**AI-Driven Student Performance Prediction and Intervention**

The "AI-Driven Student Performance Prediction and Intervention" project in Salesforce leverages AI and machine learning algorithms to analyze student data and predict academic performance. By identifying students at risk of underperforming, the system enables early interventions to improve outcomes. It integrates data from multiple sources like attendance, grades, and participation, providing educators with actionable insights to personalize support and improve student success. The project enhances decision-making through data-driven predictions and automates interventions, ultimately optimizing the educational process.

**Steps:**

Got it! Let's break down the entire process of building the **AI-Driven Student Performance Prediction and Intervention** system, exclusively using **Salesforce CRM Analytics** (Einstein Analytics). This means we'll focus solely on CRM Analytics, without reliance on Salesforce Education Cloud or any other platform. Instead, we will build the necessary components like datasets, dataflows, models, dashboards, and automation directly within the CRM Analytics environment.

Here’s a detailed guide:

**1. Define Data Requirements & Setup**

Since we are not using Salesforce Education Cloud, all data will need to be manually ingested or integrated into **Salesforce CRM Analytics**. The data will be uploaded as datasets, cleaned, transformed, and then used to build predictive models.

**1.1 Identify the Data You Need**

Here are the key datasets we need for the project:

* **Student Demographics Dataset**: Contains details like student ID, name, gender, age, socioeconomic background, etc.
* **Student Grades Dataset**: Contains historical and current grades for students. This could include mid-term grades, final grades, and subject-specific scores.
* **Attendance Dataset**: Contains attendance records, typically detailing the number of days attended, absences, and late attendance.
* **Engagement Dataset**: Tracks students' participation in school activities, such as class participation, homework submissions, online engagement (if available), and extracurricular activities.
* **Intervention Dataset**: Contains past intervention history for students. It tracks what actions (like tutoring or counseling) were taken, when they were taken, and the outcome.

**1.2 Data Upload to CRM Analytics**

Since you’re working directly with **Salesforce CRM Analytics**:

* **Datasets**: Upload your data manually (in CSV format) to **Einstein Analytics** using the **Data Manager**.
  + **Steps**:
    - Go to the **CRM Analytics Studio**.
    - Navigate to **Data Manager** → **Connect** → **Create Dataset** → Upload your datasets (CSV or other supported formats).
    - Define the necessary fields for each dataset (e.g., Student ID as a primary key in each dataset for merging).
  + **Naming Convention**: Use meaningful names for each dataset to make later steps easier. For example:
    - **Student\_Demographics**
    - **Student\_Grades**
    - **Student\_Attendance**
    - **Student\_Engagement**
    - **Intervention\_History**

**1.3 Data Integration via Dataflows**

Once datasets are uploaded, you need to connect and join them using **Dataflows**:

* In **Data Manager**, create a **Dataflow** to join the various datasets on **common keys** (usually the Student ID).
* **Steps**:
  + Navigate to **Dataflows** and create a new Dataflow.
  + Use the **Join node** to merge datasets. Ensure that you:
    - Merge **Grades** with **Attendance** and **Engagement** using **Student ID** as the key.
    - Add the **Demographics** dataset for additional features like age or background, which could affect performance.
    - Optionally join the **Intervention\_History** dataset (if available) for insight into the effectiveness of past interventions.

**2. Data Cleansing and Preparation**

To build a reliable predictive model, you need to ensure that the data is clean and well-prepared for analysis.

**2.1 Clean the Data**

* Use **Data Prep** in Einstein Analytics to cleanse the data. Specifically:
  + **Remove duplicates**: Ensure each student has only one record in each dataset.
  + **Handle missing values**: Use CRM Analytics to fill missing values with mean values, median, or flag them as missing.
  + **Normalize grades**: Ensure that grades are on a consistent scale (e.g., 0-100) across all subjects.

**2.2 Transform the Data**

* **Aggregate Data**: For some fields (like engagement or attendance), you might want to calculate averages or percentages for better analysis.
  + For example, calculate the **average attendance percentage** for each student over a period (e.g., semester).
* **Derived Fields**: You can also add derived metrics, like:
  + **GPA calculation** from individual grades.
  + **Engagement score** from participation data.
  + **Risk Factor** based on attendance, engagement, and grades (manually created initially but later improved with the AI model).
* Use **Formulas** within Dataflows to create these derived fields.
  + Example:

formula

Copy code

Risk\_Factor = (0.4 \* Attendance\_Score) + (0.3 \* Engagement\_Score) + (0.3 \* Average\_Grade)

**3. Build the Predictive Model**

The goal is to predict student performance and determine which students are at risk of poor outcomes.

**3.1 Create a Predictive Model Using Einstein Discovery**

* Go to **Einstein Discovery** (part of CRM Analytics).
  + **Steps**:
    - Select the prepared dataset (created from the Dataflows) that contains all necessary fields (grades, attendance, engagement, demographics).
    - Choose the **target variable** (e.g., **Final Grade** or **Risk Factor**) that you want to predict.
    - Select predictor variables (attendance, engagement score, demographics, past grades).
    - Einstein Discovery will automatically create a predictive model (logistic regression, classification, etc.).

**3.2 Training and Validation**

* **Split the dataset** into training and testing data within Einstein Discovery.
* Let the AI system train the model, analyze outcomes, and validate predictions using accuracy metrics.
* **Model Output**:
  + Probability of poor performance (likelihood of failing or performing poorly).
  + **Risk scores** for each student.

**3.3 Model Refinement**

* Adjust the predictor variables or the weightings if the model isn't performing as expected.
* Review insights from **What-If** scenarios in Einstein Discovery, which shows how changes in student engagement or attendance affect the predicted outcomes.

**4. Build the Recommendation System**

Now that the model identifies at-risk students, you'll want to recommend specific interventions.

**4.1 Define Interventions**

* Based on predictions, decide on interventions such as:
  + **Tutoring** for low grades.
  + **Counseling** for absenteeism or low engagement.
  + **Parental involvement** for students with behavioral issues.
* Create **mapping logic** using Einstein Analytics formulas that recommend interventions based on specific prediction thresholds.
  + Example: If predicted grade < 50, suggest tutoring.

**4.2 Automate Recommendations**

* Use **Einstein Discovery Stories** to automatically surface recommendations for educators.
* Alternatively, you can embed these recommendations in the dashboards by using **conditional logic** in **Dataflows** or **Recipes**.

**5. Build Dashboards for Monitoring**

This is where you visualize the data and predictions.

**5.1 Create Dashboards in CRM Analytics**

* **At-Risk Students Dashboard**: A dashboard that highlights students predicted to perform poorly.
  + Display columns like student name, predicted grade, risk score, and recommended intervention.
* **Performance Trends Dashboard**: This will track the performance of students over time.
  + Use line charts and trend graphs to show changes in grades, attendance, and engagement over a semester.
* **Intervention Effectiveness Dashboard**: A dashboard to monitor the effectiveness of applied interventions.
  + Compare performance before and after the intervention for each student.

**5.2 Components to Include**

* **Tables**: To list at-risk students and their associated risk scores and recommended interventions.
* **Charts**: Line charts to show grade trends and bar charts for intervention effectiveness.
* **Filters**: Allow filtering by class, grade level, or student demographic characteristics to personalize the view for different educators.

**6. Automate the Process**

Use Salesforce automation to ensure interventions are applied promptly.

**6.1 Salesforce Flow for Automation**

* Set up **Salesforce Flows** that trigger when a student's risk score reaches a critical level.
* Automatically notify teachers, counselors, or parents when an intervention is required based on Einstein Discovery predictions.

**7. Testing, Iteration, and Deployment**

**7.1 Pilot Testing**

* Test the entire system with a small group of students to ensure accurate predictions and actionable interventions.

**7.2 Full Deployment**

* Once successful, roll it out across the entire organization, ensuring educators are trained to use the system effectively.

**Data sets Used:**

**1. Student Demographics Dataset**

This dataset provides key information about the background of each student, which can be used to analyze trends and correlations with performance, engagement, and attendance.

**Fields/Columns:**

* **Student ID**: Unique identifier for each student.
* **First Name**: The student's given name.
* **Last Name**: The student's surname.
* **Gender**: Gender identification (e.g., Male, Female, Non-binary, etc.).
* **Age**: Age of the student.
* **Date of Birth**: Full date of birth.
* **Grade Level**: Current academic grade (e.g., Grade 5, 10th Grade).
* **Socioeconomic Status (SES)**: Indicator of socioeconomic background (e.g., Low-income, Middle-income, High-income).
* **Ethnicity**: Ethnic background (e.g., Hispanic, Asian, Caucasian).
* **Primary Language Spoken at Home**: The primary language spoken in the household.
* **Parents' Education Level**: Educational background of both parents (e.g., high school diploma, bachelor’s degree).
* **Special Needs**: Information on any physical or learning disabilities (Yes/No, Type).
* **Residential Address**: Home address for geographic mapping.
* **Parent/Guardian Contact Information**: Contact details (phone, email).
* **Transportation**: Mode of travel to school (e.g., Bus, Walk, Car).
* **Free/Reduced Lunch Status**: Whether the student receives free or reduced lunch (Yes/No).

**2. Student Grades Dataset**

This dataset records academic performance across different subjects, providing a view of the student's strengths and weaknesses.

**Fields/Columns:**

* **Student ID**: Links to the demographic dataset.
* **Subject**: The subject or course name (e.g., Math, Science, History).
* **Assignment Type**: Type of graded work (e.g., Mid-term, Final exam, Homework, Project).
* **Grade**: Grade/score (as a percentage, letter grade, GPA value, etc.).
* **Grade Weight**: Weighting of the assignment/exam towards the final grade.
* **Date of Assignment**: The date the work was assigned or submitted.
* **Date Graded**: When the grade was recorded.
* **Teacher ID**: ID or name of the teacher who assigned the grade.
* **Cumulative GPA**: The overall GPA for the student, updated with each grade.
* **Class Ranking**: The student’s rank within the class based on grades.
* **Historical Grades**: Records of grades from previous years.

**3. Attendance Dataset**

Attendance can significantly impact student performance and behavior. This dataset tracks both daily attendance and patterns over time.

**Fields/Columns:**

* **Student ID**: Links to demographic data.
* **Date of Attendance**: The specific date of the record.
* **Attendance Status**: Whether the student was present, absent, or late.
* **Reason for Absence**: Reason provided for any absences (e.g., Sick, Family Emergency, Unexcused).
* **Tardiness**: Whether the student was late to class (Yes/No).
* **Total Days Attended**: Total number of school days attended.
* **Total Days Absent**: Number of days the student was absent.
* **Absence Percentage**: Percentage of days absent in relation to total school days.
* **Excused vs. Unexcused Absences**: Separation of absences that are officially excused and those that are not.
* **Cumulative Attendance Record**: Overall attendance history (useful for tracking long-term patterns).

**4. Engagement Dataset**

Engagement records provide insight into how active and involved students are, both academically and socially.

**Fields/Columns:**

* **Student ID**: Links to the demographic dataset.
* **Class Participation**: Rating of in-class participation (e.g., High, Medium, Low, or a numerical score).
* **Homework Completion**: Number or percentage of homework assignments completed on time.
* **Online Engagement**: Amount of participation in online platforms (logins, discussion posts, etc.).
* **Extracurricular Activities**: List of clubs, sports, or other activities the student is involved in.
* **Behavioral Record**: Notable behaviors in class (positive or negative), such as disruptive behavior or commendations.
* **Engagement with Group Work**: Evaluation of teamwork and collaboration in group projects.
* **Awards/Recognition**: Any special achievements or recognitions (e.g., Student of the Month).
* **Engagement Trends**: Over time, how the student’s participation has changed (increase or decrease).

**5. Intervention Dataset**

Intervention records provide information on additional measures taken to support students who may be struggling.

**Fields/Columns:**

* **Student ID**: Links to the demographic dataset.
* **Intervention Type**: Specific type of intervention (e.g., Tutoring, Counseling, Special Education).
* **Date of Intervention**: When the intervention was initiated.
* **Reason for Intervention**: The reason for taking action (e.g., Low grades, Behavioral issues).
* **Assigned Staff/Teacher ID**: The teacher, counselor, or specialist involved in the intervention.
* **Intervention Duration**: How long the intervention lasted (e.g., 2 months).
* **Outcome of Intervention**: Results or improvements seen (e.g., Grade improvement, Behavioral improvement).
* **Parent Involvement**: Whether the parents were involved in the process (Yes/No).
* **Next Steps/Recommendations**: Any follow-up actions or ongoing support plans.
* **Intervention Notes**: Free-form field to include observations, notes, or additional comments.

**General Notes:**

* **Timestamps**: For each dataset, ensure timestamps are added to track when records are created, modified, or updated.
* **Data Privacy & Sensitivity**: Include a system to anonymize or encrypt sensitive student information where necessary.

**Data recipes used:**

**1. Student Profile Dataset Recipe**

Recipe Name: **Student\_Profile\_Cleaning\_Recipe**

**Logic:**

* **Objective**: Clean and prepare student demographic data for integration with other datasets.
* **Steps to Take**:
  1. **Remove Redundant Fields**: Exclude fields like Residential Address and Parent Contact Information unless specifically required.
  2. **Filter Records**: Include only currently enrolled students for active analysis.
  3. **Create Calculated Fields**:
     + **Age Group**:
       - **Formula**: IF(Age < 12, 'Child', IF(Age < 18, 'Teen', 'Adult'))
       - **Purpose**: Categorize students into age groups.
     + **Socioeconomic Risk Level**:
       - **Formula**: IF(Socioeconomic Status = 'Low-income', 'High Risk', 'Low Risk')
       - **Purpose**: Highlight students from low socioeconomic backgrounds as potentially at-risk.

**Output Dataset**: **Cleaned\_Student\_Profile**

**Datasets Used**: Student Demographics Dataset

**2. Attendance Summary Recipe**

Recipe Name: **Attendance\_Summary\_Calculation\_Recipe**

**Logic:**

* **Objective**: Summarize attendance data for identifying attendance issues.
* **Steps to Take**:
  1. **Remove Redundant Fields**: Exclude specific daily records and reasons for absences.
  2. **Create Calculated Fields**:
     + **Attendance Rate**:
       - **Formula**: (Total Days Attended / (Total Days Attended + Total Days Absent)) \* 100
       - **Purpose**: Determine attendance percentage.
     + **Absenteeism Risk Flag**:
       - **Formula**: IF(Attendance Rate < 75, 'High Risk', 'Low Risk')
       - **Purpose**: Identify students at risk of absenteeism.
  3. **Summarize Data**:
     + Calculate **Total Absences** for each student.
     + Aggregate to create **Monthly or Quarterly** attendance summaries.

**Output Dataset**: **Student\_Attendance\_Summary**

**Datasets Used**: Attendance Dataset

**3. Academic Performance Recipe**

Recipe Name: **Academic\_Performance\_Score\_Recipe**

**Logic:**

* **Objective**: Calculate cumulative academic performance across subjects for each student.
* **Steps to Take**:
  1. **Remove Redundant Fields**: Exclude unnecessary fields like Teacher ID.
  2. **Filter Records**: Focus only on the current academic year.
  3. **Create Calculated Fields**:
     + **Average Grade per Subject**:
       - **Formula**: SUM(Grade \* Grade Weight) / SUM(Grade Weight)
       - **Purpose**: To calculate weighted average grades for each subject.
     + **Cumulative GPA**:
       - **Formula**: SUM(Average Grades for All Subjects) / COUNT(Subjects)
       - **Purpose**: Provide an overall GPA for the student.

**Output Dataset**: **Student\_Academic\_Performance**

**Datasets Used**: Student Grades Dataset

**4. Engagement Level Recipe**

Recipe Name: **Student\_Engagement\_Score\_Recipe**

**Logic:**

* **Objective**: Measure and classify students’ engagement levels.
* **Steps to Take**:
  1. **Remove Redundant Fields**: Exclude fields like Extracurricular Activity Names.
  2. **Filter Records**: Focus on active students currently enrolled in school activities.
  3. **Create Calculated Fields**:
     + **Class Participation Score**:
       - **Formula**: (Class Participation + Homework Completion + Online Engagement) / 3
       - **Purpose**: Calculate an overall engagement score.
     + **Engagement Risk Flag**:
       - **Formula**: IF(Class Participation Score < 60, 'Low Engagement', 'High Engagement')
       - **Purpose**: Identify students who are disengaged from school activities.

**Output Dataset**: **Student\_Engagement\_Summary**

**Datasets Used**: Engagement Dataset

**5. Intervention Success Rate Recipe**

Recipe Name: **Intervention\_Effectiveness\_Calculation\_Recipe**

**Logic:**

* **Objective**: Assess the success rate of interventions to improve student performance or behavior.
* **Steps to Take**:
  1. **Remove Redundant Fields**: Exclude fields like Parent Involvement unless necessary.
  2. **Filter Records**: Only include records where interventions were marked as "Completed."
  3. **Create Calculated Fields**:
     + **Intervention Success Rate**:
       - **Formula**: COUNT(Intervention Outcome = 'Successful') / COUNT(Interventions Taken)
       - **Purpose**: Measure the proportion of successful interventions.
     + **Post-Intervention Improvement Score**:
       - **Formula**: (Post-Intervention GPA - Pre-Intervention GPA) / Pre-Intervention GPA
       - **Purpose**: Calculate the percentage improvement in academic performance post-intervention.

**Output Dataset**: **Intervention\_Effectiveness\_Report**

**Datasets Used**: Intervention Dataset, Student Grades Dataset

**6. At-Risk Student Identification Recipe**

Recipe Name: **At\_Risk\_Student\_Flag\_Recipe**

**Logic:**

* **Objective**: Identify students at risk based on socioeconomic background, attendance, and academic performance.
* **Steps to Take**:
  1. **Remove Redundant Fields**: Exclude personal identifiers that are not necessary.
  2. **Filter Records**: Focus on students currently enrolled in the school.
  3. **Create Calculated Fields**:
     + **Risk Level Based on Socioeconomic Status**:
       - **Formula**: IF(Socioeconomic Status = 'Low-income', 1, 0)
     + **Attendance Risk Flag**:
       - **Formula**: IF(Attendance Rate < 75, 1, 0)
     + **Academic Risk Flag**:
       - **Formula**: IF(Cumulative GPA < 2.0, 1, 0)
     + **Final At-Risk Score**:
       - **Formula**: SUM(Socioeconomic Risk Level + Attendance Risk Flag + Academic Risk Flag)
       - **Purpose**: To flag students with a score of 2 or more as "At-Risk."

**Output Dataset**: **At\_Risk\_Student\_Report**

**Datasets Used**: Student Demographics Dataset, Attendance Dataset, Student Grades Dataset

**Dashboard and it’s pages**: Student performance Dashboard

**1. Student Profile Overview Page**

**Datasets to Use**:

* **Cleaned\_Student\_Profile** (from Student\_Profile\_Cleaning\_Recipe)

**Logic and Functionality**:

* **Student Demographics Breakdown**:
  + **Dataset**: Cleaned\_Student\_Profile
  + **Logic**: Display student demographics such as gender, age group, and socioeconomic background.
  + **Widget Type**: Pie Chart or Bar Chart.
* **Socioeconomic Risk Distribution**:
  + **Dataset**: Cleaned\_Student\_Profile
  + **Logic**: Show distribution of students based on socioeconomic risk levels (Low, Medium, High).
  + **Widget Type**: Donut Chart.
* **Age Group Categorization**:
  + **Dataset**: Cleaned\_Student\_Profile
  + **Logic**: Show students categorized into age groups (Child, Teen, Adult).
  + **Widget Type**: Stacked Bar Chart.

**Purpose**: This page provides a high-level view of the student demographics and risk levels based on socioeconomic status, helping to understand the diversity and needs of the student population.

**2. Academic Performance Page**

**Datasets to Use**:

* **Student\_Academic\_Performance** (from Academic\_Performance\_Score\_Recipe)

**Logic and Functionality**:

* **Subject-wise Performance**:
  + **Dataset**: Student\_Academic\_Performance
  + **Logic**: Display average grades across different subjects (Math, Science, History, etc.).
  + **Widget Type**: Bar Chart.
* **GPA Distribution**:
  + **Dataset**: Student\_Academic\_Performance
  + **Logic**: Show the distribution of GPAs across students.
  + **Widget Type**: Histogram.
* **Cumulative GPA Trends**:
  + **Dataset**: Student\_Academic\_Performance
  + **Logic**: Show GPA trends over time for specific students or the overall class.
  + **Widget Type**: Line Chart.

**Purpose**: This page focuses on tracking students' academic performance across subjects and time, offering insights into individual and overall academic trends.

**3. Attendance Monitoring Page**

**Datasets to Use**:

* **Student\_Attendance\_Summary** (from Attendance\_Summary\_Calculation\_Recipe)

**Logic and Functionality**:

* **Attendance Rate Distribution**:
  + **Dataset**: Student\_Attendance\_Summary
  + **Logic**: Show attendance rates of students, categorized by ranges (e.g., 75%-100%, 50%-75%).
  + **Widget Type**: Pie Chart.
* **Absenteeism Risk Analysis**:
  + **Dataset**: Student\_Attendance\_Summary
  + **Logic**: Display the number of students at risk of absenteeism (those with <75% attendance).
  + **Widget Type**: Bar Chart.
* **Monthly Attendance Trends**:
  + **Dataset**: Student\_Attendance\_Summary
  + **Logic**: Show trends in attendance over months to identify specific periods with high absenteeism.
  + **Widget Type**: Line Chart.

**Purpose**: This page tracks students' attendance patterns and highlights those at risk of absenteeism, enabling targeted interventions.

**4. Student Engagement Page**

**Datasets to Use**:

* **Student\_Engagement\_Summary** (from Student\_Engagement\_Score\_Recipe)

**Logic and Functionality**:

* **Engagement Score Distribution**:
  + **Dataset**: Student\_Engagement\_Summary
  + **Logic**: Show the distribution of student engagement scores (Class Participation, Homework Completion, etc.).
  + **Widget Type**: Histogram.
* **Low vs High Engagement Comparison**:
  + **Dataset**: Student\_Engagement\_Summary
  + **Logic**: Compare the number of students in Low Engagement vs High Engagement categories.
  + **Widget Type**: Stacked Bar Chart.
* **Class Participation Trends**:
  + **Dataset**: Student\_Engagement\_Summary
  + **Logic**: Show participation trends over time to assess whether students' engagement is improving or declining.
  + **Widget Type**: Line Chart.

**Purpose**: This page helps in tracking the overall engagement of students across different activities and allows educators to identify those who might require additional support.

**5. Intervention Effectiveness Page**

**Datasets to Use**:

* **Intervention\_Success\_Summary** (from Intervention\_Success\_Rate\_Calculation\_Recipe)

**Logic and Functionality**:

* **Intervention Success Rate**:
  + **Dataset**: Intervention\_Success\_Summary
  + **Logic**: Show the overall success rate of interventions (successful vs unsuccessful).
  + **Widget Type**: Pie Chart.
* **Attendance Improvement Post-Intervention**:
  + **Dataset**: Intervention\_Success\_Summary
  + **Logic**: Display the change in attendance rates before and after intervention.
  + **Widget Type**: Line Chart or Bar Chart.
* **Engagement Improvement Post-Intervention**:
  + **Dataset**: Intervention\_Success\_Summary
  + **Logic**: Show the improvement in class participation scores post-intervention.
  + **Widget Type**: Bar Chart.

**Purpose**: This page evaluates the success of interventions, providing insights into how effective certain actions are in improving attendance, engagement, and academic performance.

**6. At-Risk Student Dashboard Page**

**Datasets to Use**:

* **At\_Risk\_Student\_Report** (from At\_Risk\_Student\_Flag\_Recipe)

**Logic and Functionality**:

* **Overall At-Risk Student Count**:
  + **Dataset**: At\_Risk\_Student\_Report
  + **Logic**: Show the total number of students flagged as at-risk based on socioeconomic, attendance, and academic factors.
  + **Widget Type**: KPI Widget (Key Performance Indicator).
* **Risk Distribution by Factor**:
  + **Dataset**: At\_Risk\_Student\_Report
  + **Logic**: Break down at-risk students by the key factors: Socioeconomic, Attendance, Academic.
  + **Widget Type**: Stacked Bar Chart.
* **Risk Level Trend Analysis**:
  + **Dataset**: At\_Risk\_Student\_Report
  + **Logic**: Show trends in the number of at-risk students over time (monthly or quarterly).
  + **Widget Type**: Line Chart.

**Purpose**: This page is crucial for identifying and tracking students who are at risk due to various factors, allowing early interventions and support to improve their outcomes.

**7. Comparative Insights Dashboard Page**

**Datasets to Use**:

* **Cleaned\_Student\_Profile**
* **Student\_Academic\_Performance**
* **Student\_Engagement\_Summary**
* **Student\_Attendance\_Summary**

**Logic and Functionality**:

* **Comparison of Socioeconomic Status and GPA**:
  + **Datasets**: Cleaned\_Student\_Profile, Student\_Academic\_Performance
  + **Logic**: Show the correlation between socioeconomic status and GPA.
  + **Widget Type**: Scatter Plot.
* **Engagement vs Attendance**:
  + **Datasets**: Student\_Engagement\_Summary, Student\_Attendance\_Summary
  + **Logic**: Analyze the relationship between engagement scores and attendance rates.
  + **Widget Type**: Bubble Chart.
* **At-Risk Students by Performance and Attendance**:
  + **Datasets**: At\_Risk\_Student\_Report, Student\_Academic\_Performance, Student\_Attendance\_Summary
  + **Logic**: Display the academic performance and attendance of at-risk students to identify those in need of urgent support.
  + **Widget Type**: Heat Map or Bar Chart.

**Purpose**: This page provides deep insights into relationships between various factors (e.g., performance, engagement, attendance) and helps identify key areas of concern for students at different risk levels.