WEEK 3

DEVELOPMENT OF DATA VISUALIZATIONS IN LOOKER STUDIO

By

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DATA VISUALIZATION ASSOCIATE EARLY INTERNSHIP

DURATION - 1 MONTH

APRIL - 2025

WIREFRAME REPORT

🎯OBJECTIVE -

The wireframe is a visual mockup that outlines the layout and functionality of the final dashboard. It ensures clarity of design before any data visualization tools (like Power BI, Tableau or Looker) are used.

✅ STEP 1: WHY WIREFRAMING IS ESSENTIAL

- Organize KPIs visually so decision-makers get instant insights.
- Plan chart placements logically, avoiding overlaps or unused space.
- Ensure user-friendliness by grouping filters, KPIs, and visuals.
- Avoid rework, by mapping the purpose of each section clearly.

✅ STEP 2: IDENTIFY KEY DASHBOARD SECTIONS

🔹 KPI Boxes (Top Row) -

Choose 3–4 key metrics for quick-glance insights -

- Total Learners
- Application Status
- Cohort Match Rate
- Gender Distribution (Male / Female / Null%)

🔹 Main Charts (Middle Section) -

Plan 2–3 graphs that cover trends, proportions, or comparisons -

1. Bar Chart -
- Dropout/Status by Institution
- Insight - See which institutions have high or low learner status success.

2. Line Chart -
- Application Trend Over Time (based on apply_date)
- Insight - Seasonality or spikes in enrollments.

3. Pie Chart -
- Gender Proportion or Degree Type
- Insight - Demographic breakdown.

🔹 Table (Bottom Section) -

- Detailed Learner Breakdown
- Columns - Learner ID, Institution, Degree, Status, Gender, Apply Date
- Allow for drill-downs and sorting.

🔹 **Filters (Sidebar or Top Right) -**

- Time Period (Apply Date range)
- Institution
- Degree
- Gender
- Status

✅ STEP 4: ANNOTATE THE WIREFRAME

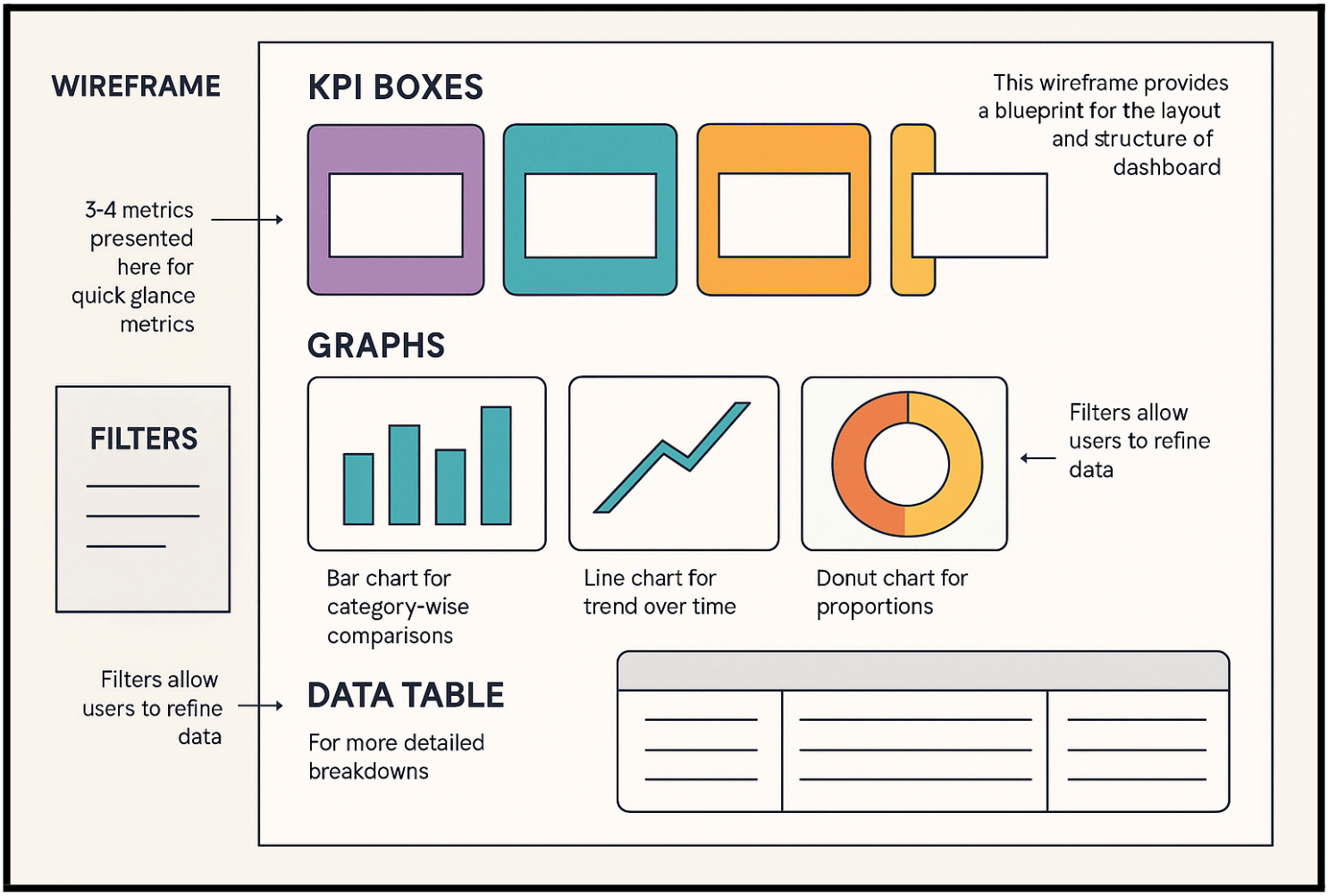
- KPI: Status → Shows main enrollment status; critical for tracking learner progress.
- Bar Chart (Status by Institution) → Highlights performance per institution.
- Line Chart (Apply Date) → Tracks enrollment trends over time.
- Donut Chart (Gender) → Gives a clear visual of demographic distribution.
- Filters → Allow slicing by demographics, academic fields, and time — essential for exploring patterns.
- Data Table → Detailed records for further analysis or export.

✅ STEP 5: TOOLS USED TO BUILD THE WIREFRAME

MOQUPS

- Purpose-Built - Moqups is designed specifically for wireframes, mockups and UI diagrams.
- UI Elements - Offers built-in UI kits, components and templates for faster design work.
- Interactive Prototypes - Supports clickable links between pages for simple prototyping.
- Easy to Use - Simpler and quicker to learn than Figma, ideal for non-designers.
- Web-Based - No downloads—accessible from any browser, anytime.

🎯 WIREFRAME SAMPLE MODEL



@ EXCELERATE

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Total Learners

This KPI provides an instant snapshot of the total number of learners enrolled, helping stakeholders gauge program reach at a glance.

Application Status

This KPI shows the real-time distribution of learners across different application statuses, critical for monitoring enrollment pipelines and bottlenecks.

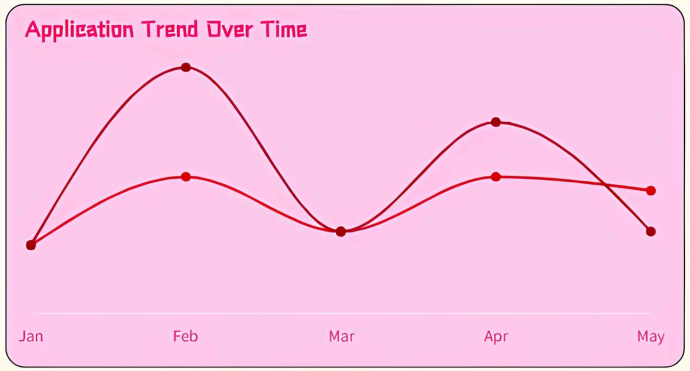
Cohort Match Rate

This KPI indicates how successfully applicants are matched to cohorts, revealing alignment between applicant profiles and cohort requirements.

Gender Distribution

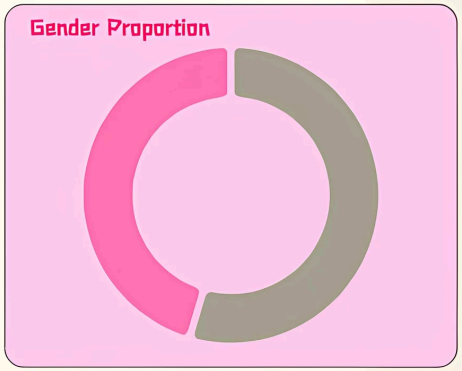
This KPI displays the gender breakdown of learners, offering quick demographic insights essential for diversity tracking and reporting.

Application Trend Over Time

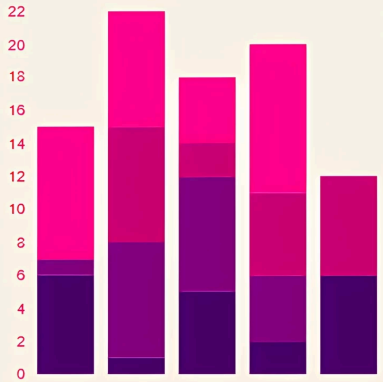


The Line Graph shows how applications evolve over weeks or months. Reveals patterns like seasonal spikes, steady growth, or sudden drops. Line charts are perfect for tracking changes over time. They clearly visualize trends, making it easier to predict future application behaviors.

Gender Proportion



The Pie Chart Shows the proportion of learners by gender (or degree types) as parts of a whole. Quick glance at demographic or qualification breakdown. Pie charts are the clearest way to show part-to-whole relationships. The circular format makes percentage comparisons intuitive.



The Bar Graph Displays how learner statuses (enrolled, dropout, pending, etc.) vary across different institutions. Highlights top and low performers. Bar charts are ideal for comparing discrete categories (institutions) side by side. Easy to spot where most dropouts or successes occur.

LEARNER BREAKDOWN

Learner ID	Institution	Degree	Status	Gender	Apply Date	Country	Major
100238	Saint Louis University	B.Sc. IT	1070	Female	2023-07-15	Philippines	Information Tech
100872	University of Cebu	B.A. English	1055	Male	2023-11-02	Philippines	English Studies
100444	Ateneo de Manila Univ.	B.Sc. CompSci	1030	Female	2022-09-10	Philippines	Computer Science
101050	Saint Louis University	M.Ed.	Null	Null	2024-01-08	Philippines	Education
101116	UP Diliman	B.Sc. Math	1120	Male	2023-05-21	Philippines	Mathematics

The **Learner Breakdown** data table provides a granular view of each learner's academic and demographic data, supporting in-depth analysis beyond high-level KPIs and charts. It enables users to drill down into individual records, identify patterns, verify trends, and spot data gaps such as missing degrees or unassigned cohorts. This table is essential for transparency, export-ready reporting, and advanced filtering — making it a critical component for decision-makers and analysts alike.

FILTERS

Apply Date Range

Filter learners based on the time of their application. Helps identify trends over time or analyze specific cohorts by enrollment periods.

Institution

Allows narrowing down insights to a specific university or school. Useful for comparing performance, dropout rates, and demographic spread across institutions.

Degree

Filter learners by degree type (e.g., B.Sc., M.Ed., etc.). Supports academic-level breakdowns and curriculum-focused analyses.

Gender

Enables demographic exploration and equity analysis. With ~33% missing values, the filter should also include a "Null" category.

Status

Filter learners by their current application or enrollment status (e.g., 1070 = Enrolled, 1030 = Dropped, etc.). Key for tracking conversion funnels.

Assigned Cohort

Filter based on assigned learning cohorts. Ideal for evaluating program performance and comparing learner outcomes across different batches.

MAPPING TABLE REPORT

✅ STEP 1: UNDERSTAND THE MASTER TABLE

The Master Table integrates cleaned data from 5 out of 6 datasets -

- learner_raw
- cohort
- opportunity_raw
- cognito
- learner_opportunity

Each row in the master table represents a learner enrollment enriched with -

- Personal details (from cognito)
- Academic background (from learner_raw)
- Enrollment info (from learner_opportunity)
- Program/cohort details (from cohort)
- Opportunity metadata (from opportunity_raw)

Main columns in the Master Table include -

- learner_id, country
- opportunity_name, category
- assigned_cohort, apply_date, status, size
- degree, institution
- start_date, end_date
- email, gender, birthdate, city, zip, state

✅ STEP 2: IDENTIFY IMPORTANT COLUMNS

🔹 KPIs (Key Performance Indicators)

- Status Distribution - Most common status is 1070 (~67%)
- Application Volume - Count of enrollment_id
- Cohort Size Trends - From size field
- Gender Representation - Especially with ~33% NULLs
- Application Timing - Based on apply_date

🔹 Metrics

- Learner Status (Overall volume of learner participation)
- Cohort Match Rate (Completeness of cohort assignments)
- Age (derived from birthdate)
- Duration of programs (computed as end_date - start_date)
- Tracking question completion (optional insights)
- Cohort Size (Population size per cohort, useful for capacity/planning analyses)
- Institution Name (Comparative institutional outreach/performance)

🔹 Categories / Dimensions

- institution, degree, country, category
- email, birthdate, gender, state, city, zip
- learner_id, opportunity_name, assigned_cohort
- status, apply_date, start_date, end_date, size
-

These dimensions help slice/filter data in dashboards.

✅ SAMPLE MAPPING TABLE

Dashboard Field	Source fields	Target fields(Master	Data Type	Transformation / Calculation	Business Logic / Usage
		master_id	Integer	Primary Key	Sequence genarator
Learner ID	learner_id	learner_id	Character Var[50]	substring(learner-id,9)	Unique identifier for join keys; used for drill-downs and de-duplication
Opportunity Name	opportunity_name	opportunity_name	Text	TRIM() + INITCAP()	Standardizes naming; enables grouping by opportunity for performance comparisons
Cohort Match Rate	assigned_cohort	assigned_cohort	Character Var[50]	COUNT(assigned_cohort IS NOT NULL) / COUNT(enrollment_id) * 100	Measures completeness of cohort assignments—key for operational efficiency
Apply Date	applydate	apply_date	Date	TO_DATE(REGEXP_REPLACE(apply_date, '[^0-9-]', ''), 'YYYY-MM-DD')	Cleans formats, ensures all dates are valid—drives time-series charts and period filters
Learner Status	status	status	Integer	None (raw code used)	Used directly for status distribution charts; enables segmentation by application outcome
Learner Country	country	country	Character Var[60]	INITCAP()	Normalizes country entries; drives filters and grouping in demographic analysis
Degree Type	degree	degree	Character Var[300]	TRIM() + INITCAP()	Normalizes academic qualification entries; drives filters and grouping in demographic analysis
Institution Name	institution	institution	Character Var[300]	TRIM() + INITCAP()	Standardizes institution names; critical for accurate institution-level reporting
Program Duration (Start)	start_date	start_date	Timestamp	None (already converted to DATE in ETL)	Baseline for calculating duration; used in slope/trend analysis when paired with end_date
Program Duration (End)	end_date	end_date	Timestamp	None (already converted to DATE in ETL)	Paired with start_date to derive overall program length for cohorts
Cohort Size	cohort_size	size	Integer	None (raw value)	Used in bar/line charts to compare cohort population sizes; flag outliers
Email (for drilldowns)	email	email	Text	TRIM() + LOWER()	Ensures consistent email formatting; used in detail table and for linking learner communication outreach
Gender Distribution	gender	gender	Character Var[10]	INITCAP()	Cleans up inconsistent casing; drives demographic donut charts and gender-based segmentation
Learner Birthday	birthdate	birthdate	Date	TO_DATE(REGEXP_REPLACE(birthdate, '[^0-9-]', ''), 'YYYYMMDD')	Validates birthdate formats; base for age calculation
Location (City)	city	city	Character Var[50]	INITCAP()	Standardizes city names; used for geographic filtering and heatmaps
Location (Zip)	zip	zip	Character Var[50]	None (raw value)	Used for precise drill-downs and geocoding if needed
Location (State)	state	state	Character Var[50]	TRIM() + INITCAP()	Normalizes state entries; supports regional analysis and dashboard filtering
Opportunity Category	category	category	Character Var[50]	INITCAP()+TRIM()	Category value is determined for each lerner opportunity; drives filters and grouping in demographic analysi

✅ KEY TRANSFORMATION TECHNIQUES USED ACROSS THE MASTER TABLE -

- INITCAP() - Standardizes text formatting across inconsistent case entries
- TRIM() - Removes unwanted white spaces before/after values
- DISTINCT - Ensures deduplication of entries from learner/opportunity sources
- REGEXP_REPLACE - Used in marketing and date fields to clean strings and symbols
- TO_DATE() / TO_TIMESTAMP() - Validates and standardizes inconsistent date formats
- AGE() - Derives numerical age from birthdate column
- NULLIF() / IS NOT NULL - Used in filter and engagement metrics to avoid null value skewing