INT374 : DATA ANALYTICS WITH POWER BI

PROJECT REPORT

V-SEMESTER (Oct-Jan 2026)

Impact of AI Tools On Students Learning

Submitted by

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Registration No:-12311346

Programme:- B.Tech CSE

Section:-K23CT

Course Code :-INT374

Under the Guidance of

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CERTIFICATE

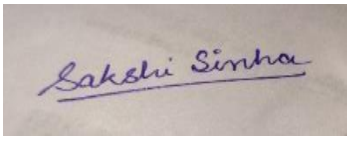
This is to certify that **Sakshi Sinha** bearing Registration no**.12311346** has completed **INT374** project titled, **"Impact of AI Tools on Student's Learning"** under my guidance and supervision. To the best of my knowledge, the present work is the result of his/her original development, effort and study.

Dr.Tanima Thakur
Assistant Professor
School of Computer Science and Engineering
Lovely Professional
University Phagwara, Punjab.

Date: 14-12-2025

DECLARATION

I, Sakshi Sinha, student of BTech under CSE/IT Discipline at, Lovely Professional University, Punjab, hereby declare that all the information furnished in this project report is based on my own intensive work and is genuine.

Date: 14-12-2025 Signature:- 

Registration No.: 12311346 Name of the student: Sakshi Sinha

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1.Introduction

The growing incorporation of intelligence technologies in education has significantly influenced students learning habits, achievement and involvement. As AI-driven learning platforms become more widespread it is essential to comprehend how students interact with these tools and the resulting educational outcomes. Nonetheless due to the scope of educational surveys covering extensive populations extracting valuable insights, from this data can often be challenging.

To address this the project undertakes data analysis research titled ***"Impact of AI Tools, on Student Learning "*** utilizing a dataset gathered from a survey administered through a structured Google Form. The dataset is augmented with responses produced by AI to enable extensive exploratory data analysis and visualization. Data preparation, cleansing and verification were performed using the Power Query Editor.

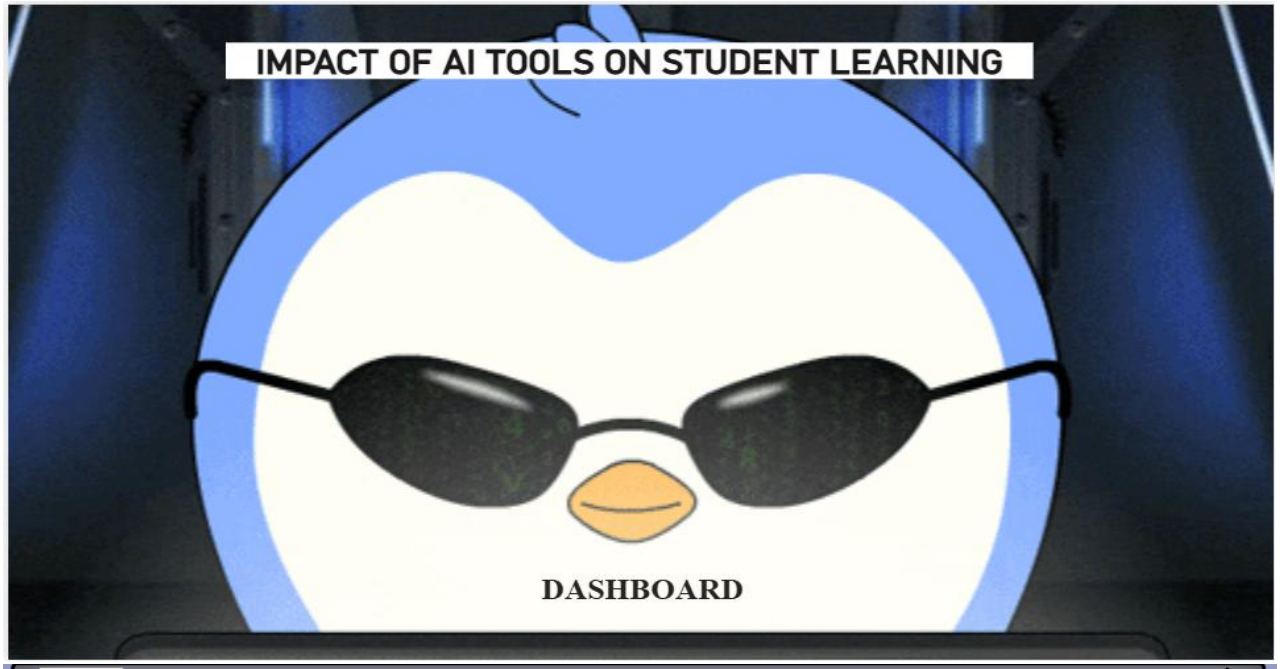
The generated dataset underwent examination using Power BI facilitating innovative and interactive dashboard creation to provide a comprehensive evaluation of students' engagement, with AI tools. The dashboard will permit users to:

- Examine AI tool usage trends among students.
- Make comparisons of learning performance and participation levels among various student populations.
- Add a visual representation of AI tool usage in different academic disciplines.
- Determine important elements affecting student performance and satisfaction.
- Conduct pairwise comparisons of learning effectiveness before and after using AI tools.

Users will be able to explore demographics, education levels and types of AI tools through interactive filters. The integration of preprocessing techniques with interactive visual exploration will ensure transparency and support deeper examination of current patterns and developments.

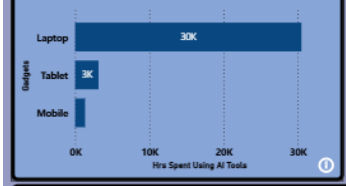
Such a project aims to showcase how advanced tools of data analysis and visualization can make a simple educational survey dataset more informative and meaningful. The project shows how educational decisions can be influenced using data analysis and AI technology in order to make learning methodologies better.

DASHBOARD



IMPACT OF AI TOOLS ON STUDENT LEARNING

AI Usage Hours by Preferred Gadget



Verify the Answers

Always | Never | Rarely | Sometimes

Avg Hours Spent Using AI

5.99

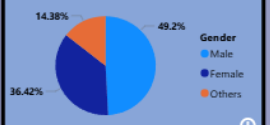
Total Study Hours

105

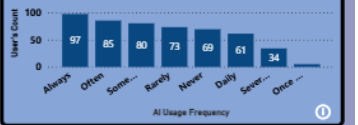
Gadgets

Lapt... | Mob... | Tablet

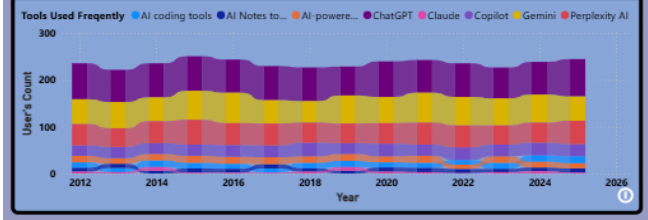
AI Tools Used By Gender



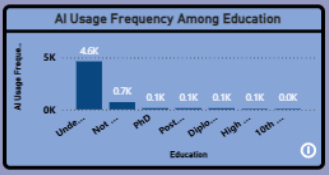
AI Usage Frequency Among Users



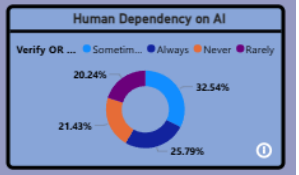
Evolution of AI Tools over the Year



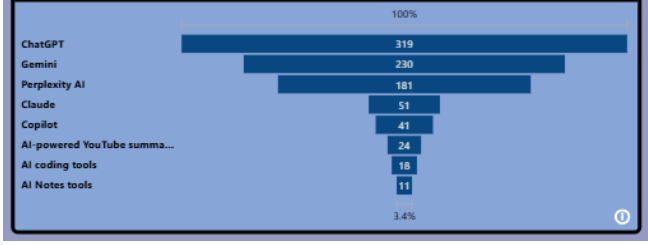
AI Usage Frequency Among Education



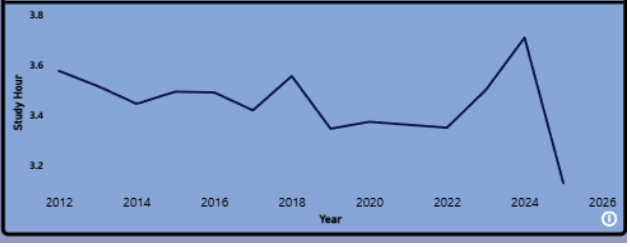
Human Dependency on AI

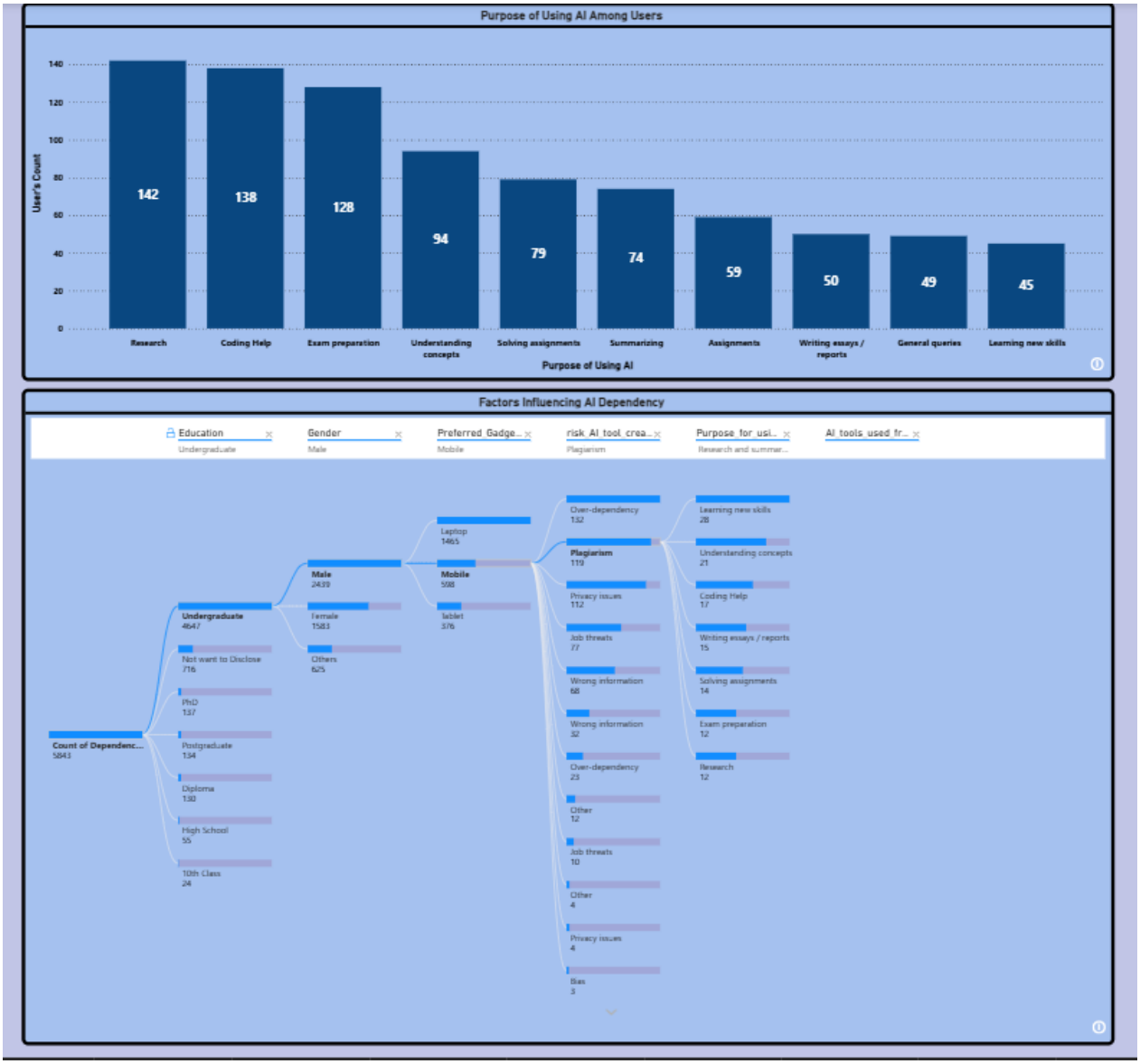


Count of Full Name by AI_tools_used_frequently



Average Study Hours Per Year





2.Source of Dataset

The information used in this research work is based on a Google form developed to collect information in line with the study aims. The form is used to collect responses meant for identification of trends, views, and tendencies related to this project. To augment the responses used in analysis, additional responses were used based on AI technology.

The dataset chosen for this analysis contains information related to usage trends, preferences, and perceived outcomes among participants concerning the research topic. The type of information

gathered from this dataset is a mix of surveys, with additional AI-generated data providing scale without affecting relationships among variables.
This data provides a basis for analysis of trends and patterns existing in a given field of interest. The comparison is facilitated among the different response groups. Trends are highlighted and aid in establishment of factors responsible for such trends. The manner in which this information is presented makes it ideal for analysis.

- DatasetLink:- https://docs.google.com/forms/d/e/1FAIpQLSeQ1gKTsj7jjASK7bc5vMwS8FmhGR8_0ER6qT_ZwBmvtquqqg/viewform

- Responses:- https://docs.google.com/spreadsheets/d/1N6G0Dr2Ae_FxY7iDsuxMWDz1dgf_9c-wwS9eaxSTdgs/edit?resourcekey=&gid=471480764#gid=471480764

Important characteristics of this dataset:

Attributes: Timestamp,1.Full Name , 2.Age, 3. Gender, 4. Level of Education, 5. Have you used AI tools for learning? , 6.Which AI tools do you use most frequently?, 7. How frequently do you use AI tools for study or assignments?, 8. For what purpose do you use AI tools?, 9.Do you feel dependent on AI instead of thinking yourself? , 10. Do you worry that AI may reduce creativity or critical thinking?, 11. What risks do you think AI tools create?, 12. Do you cross-check answers given by AI?

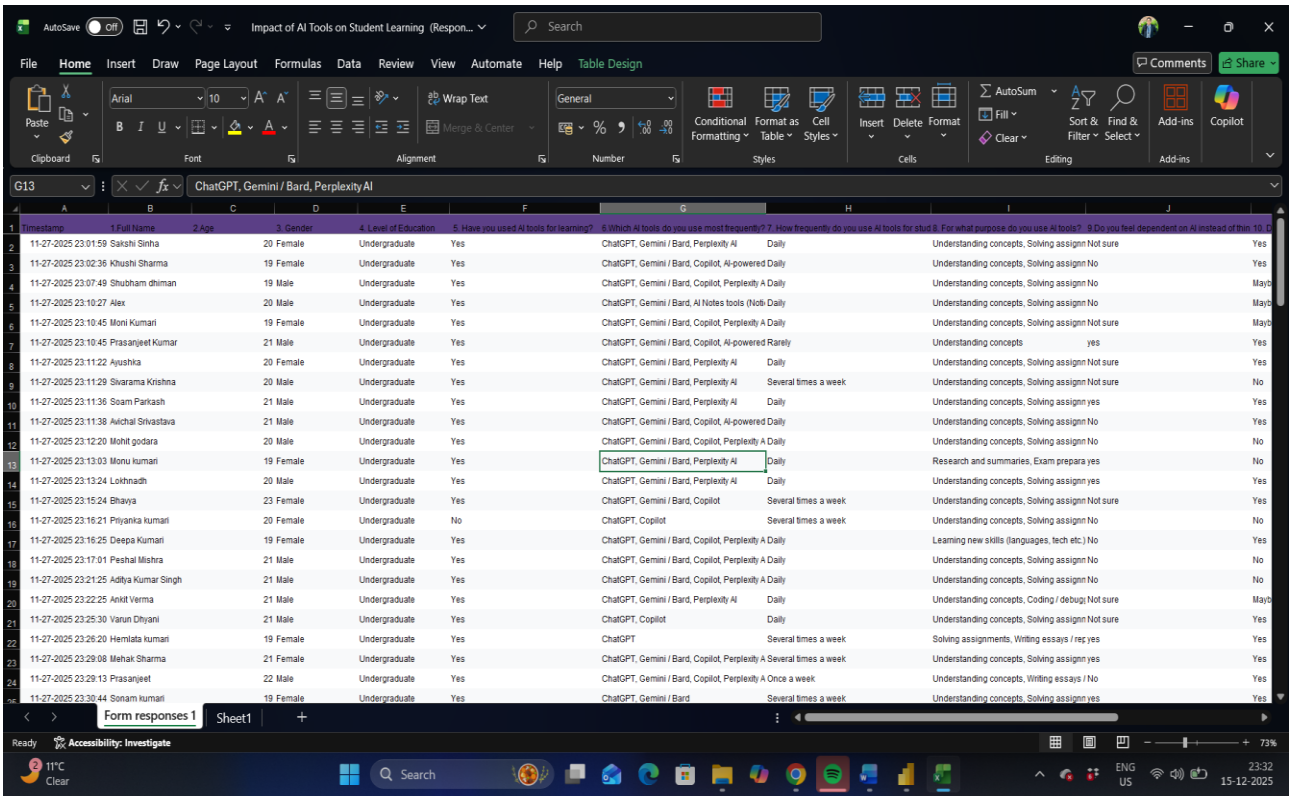
Coverage: Data compiled over time augmented with AI-assisted entries to boost the volume of the dataset

Format: EXCEL

Use case: To facilitate analytical work such as trend analysis, comparative analysis, analysis of response distribution, and graphical analysis of survey findings

The downloaded dataset was in excel form and was cleaned and converted using Power Query. The project used Power BI for creating visualizations from this dataset.

3. Sample Dataset



4. Dataset Preprocessing

Before performing analysis and creating visuals the dataset was preprocessed to ensure data quality, consistency and reliability. Proper preprocessing is essential because it directly influences the accuracy of outcomes and the efficiency of the Power BI visuals produced.

Steps Taken for Preprocessing

1. Data Cleaning:-

The initial dataset exhibited inconsistencies, missing entries and formatting issues. To address these the following cleaning steps were performed using the Power Query Editor:

- Removed rows containing completely blank or irrelevant values.
- Standardized text entries by trimming extra spaces and correcting inconsistent naming conventions.
- Replaced inconsistent or incorrect values using multiple Replace Value operations.
- Removed redundant rows that were irrelevant, to the analysis.
- Renamed columns for clarity and uniformity.
- Split columns, by delimiters whenever a field holds values.
- Modified data types where necessary to guarantee recognition of numerical and categorical fields.

2. Handling Missing Values:-

- In the absence of data columns were handled through Replace Value, Fill Up and Fill Down techniques to maintain consistency.
- Rows missing information that could influence the precision of the analysis were omitted.
- Columns that largely consisted of missing information or were irrelevant to the projects objectives were removed.

3. Feature Engineering (Added Columns):-

To improve the dataset and support analysis additional columns were incorporated through the Add Column feature, in Power Query:

- **STUDY_HOUR:** Generated using logical conditions and random functions to represent the average number of study hours, based on verified response patterns.
- **TRUST_LEVEL:** Created based on the Verify Answer logic to reflect the level of trust respondents have in the system or tool being analyzed.
- **YEAR:** Added using random year generation to support time-based analysis and trend visualization.
- **HOUR_SPENT_USING_AI:** Created based on the Verify Answer logic to reflect the hour spent using ai Respondents have in the system or tool being analyzed.
- **PREFFERED_DEVICES:** Generated using logical conditions and random functions to represent the preferred devices based on verified response patterns using hour_spent_using_AI.

The generated columns enhanced the data's information. Permitted. Pattern assessments, inside the dashboard.

4. Final Dataset Preparation:

- To avoid bias repeated entries were removed.
- Data underwent. Filtering to enhance clarity and organization.
- The final examinations were conducted to ensure each column was neat, consistent and ready, for evaluation.

5. Data Export for Visualization:

After preprocessing and feature engineering, the cleaned dataset was finalized and loaded directly into Power BI for visualization and dashboard creation.

5. Analysis on dataset

Objective 1: AI Usage Hours by Preferred Gadget

i. Objective

This objective explores the length of time users engage with AI tools, on devices. The purpose is to determine which devices are commonly used for AI applications. By analyzing usage patterns across laptops, tablets and smartphones the study uncovers device preferences and habits offering understanding into technology availability and dependence in environments.

ii. Specific Requirements

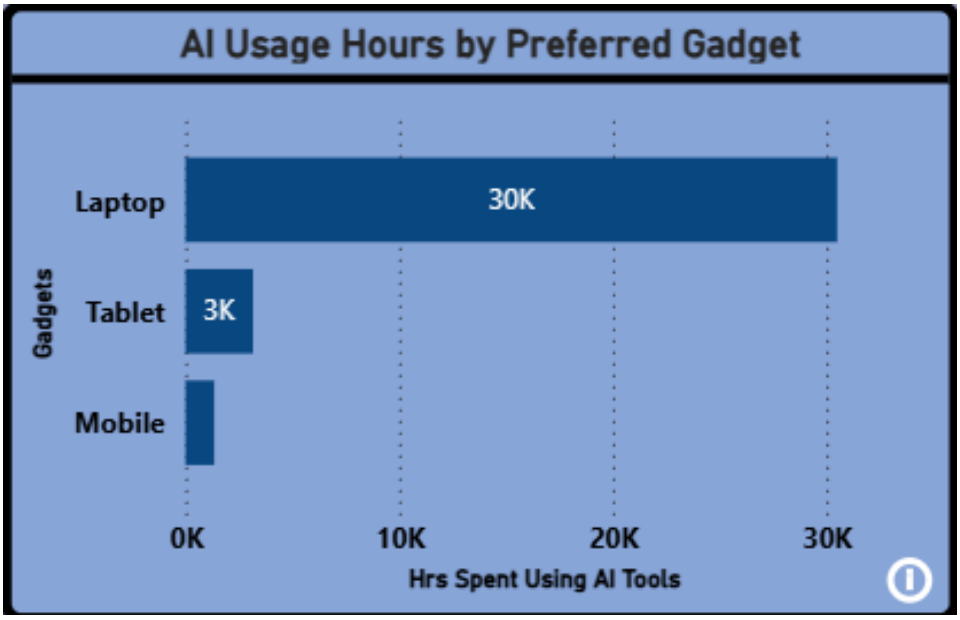
- Calculate total AI usage hours for each gadget type
- Compare and rank gadgets based on overall usage time
- Represent the comparison using a horizontal bar chart
- Display usage values directly on the bars for clarity
- Maintain a clean and readable layout for easy interpretation

iii. Analysis Results

The results indicate differences in AI utilization across devices. Laptops top the list with **30,000 hours** of AI involvement emphasizing a preference for laptops in AI-related tasks. Tablets record 3,000 hours showing a presence of use. Mobile devices reveal patterns suggesting AI app engagement via their displays. In conclusion the data establishes laptops as the devices, for AI interaction with tablets and smartphones acting as alternatives.

iv. Visualization

The insights are presented using a horizontal bar chart titled "AI Usage Hours by Preferred Gadget." The chart places gadget categories on the vertical axis and total AI usage hours on the horizontal axis. Each bar is labeled with its corresponding value to make comparisons straightforward. The simple and structured design of the visualization allows viewers to quickly identify differences in device usage and understand overall AI adoption patterns across gadgets.



Objective 2: AI Usage Hours by Preferred Gadget

i. General Description

This research aims to analyze the usage trends of AI tools over timeframes. The study adopts an approach to evaluate if the demand for different AI applications is

Increasing, steady or decreasing. By conducting this analysis one can track how user choices have shifted in parallel with progress, in AI technology.

ii. Specific Requirements

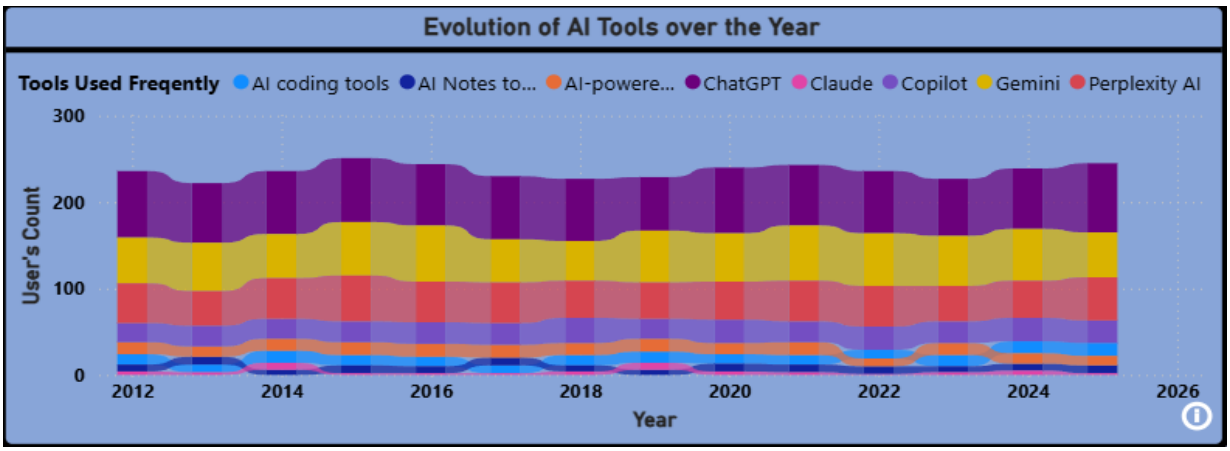
- Evaluate usage statistics of different AI algorithms per year
- Comparison of Growth Patterns Among Tools
- Use a stacked area graph to show cumulative usage
- Use distinct color segments to distinguish each AI tool
- Make sure the timeline visualization is appropriate, for contrasting trend patterns.

iii. RESULTANT

The chart depicts a rise in the adoption of AI tools as time progresses. Platforms such as ChatGPT, Gemini, Copilot and Perplexity AI demonstrate an increasing pattern in usage signaling expanding acknowledgment and acceptance. Although certain tools keep usage levels others exhibit a gradual growth in recent years suggesting a movement, toward preferring newer options. The bar chart divides usage into categories showing the application of several tools adding up to the overall AI usage rather than relying on a single tool exclusively.

iv. Visualization

The results are presented in a stacked area graph with a title of "Evolution of AI Tools over the Year." The X-axis is used to represent the year, and the Y-axis represents the number of users. Every colored area in this graph represents a different AI tool, which shows how each tool contributes over time. Such a graph can be used to see the trend of each tool individually and the cumulative increase in usage over time.



Objective 3: AI Tools Used By Gender

i. General Description

This objective aims to understand how the use of AI tools is distributed across different gender groups. By examining participation levels among males, females, and others, the analysis helps identify representation patterns and inclusivity in AI tool adoption. Such insights are useful for understanding accessibility and engagement trends in technology usage.

ii. Specific Requirements

- Categorize users based on gender
- Calculate the percentage share of AI tool usage for each group
- Represent the distribution using a pie chart
- Clearly label each segment with percentage values
- Use distinct colors to differentiate gender categories

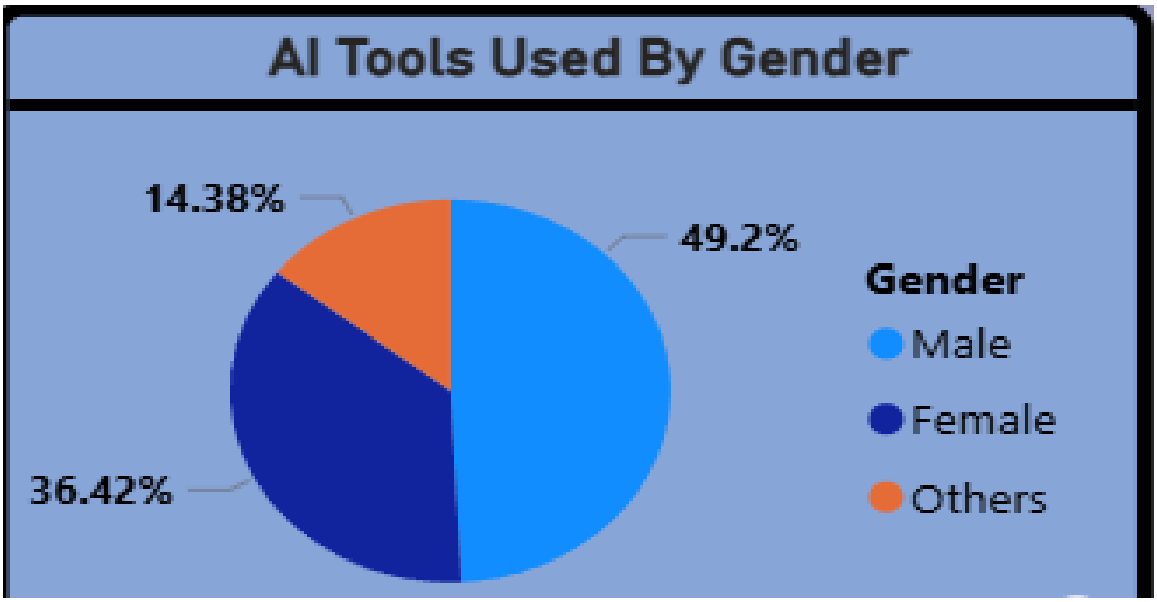
iii. Analysis Results

The results show that **male users account for the largest share** of AI tool usage, representing approximately **49.2%** of the total. **Female users** follow with around **36.42%**, indicating strong participation but slightly lower usage compared to males. The **'Others' category** contributes about

14.38%, reflecting growing diversity in AI tool adoption. Overall, the findings suggest that while AI usage is highest among males, participation across genders is fairly balanced, with meaningful representation from all groups.

iv. Visualization

The findings are visualized using a pie chart titled **"AI Tools Used by Gender."** Each segment represents a gender category and displays its corresponding percentage share. The clear labeling and distinct color scheme make it easy to compare usage proportions at a glance. This visualization effectively highlights gender-based distribution and supports a straightforward understanding of AI tool adoption patterns.



Objective 4: AI Usage Frequency Among Users

i. General Description:

This study aims to understand how frequently users interact with Artificial Intelligence tools in their daily activities. By analyzing different levels of AI usage such as Always, Often, Sometimes, Rarely, and Never, the objective is to identify common usage patterns and measure overall user engagement. This analysis helps in understanding the acceptance and reliance on AI technologies, which can further support improvements in AI-based systems, user training programs, and technology adoption strategies.

ii. Specific Requirements:

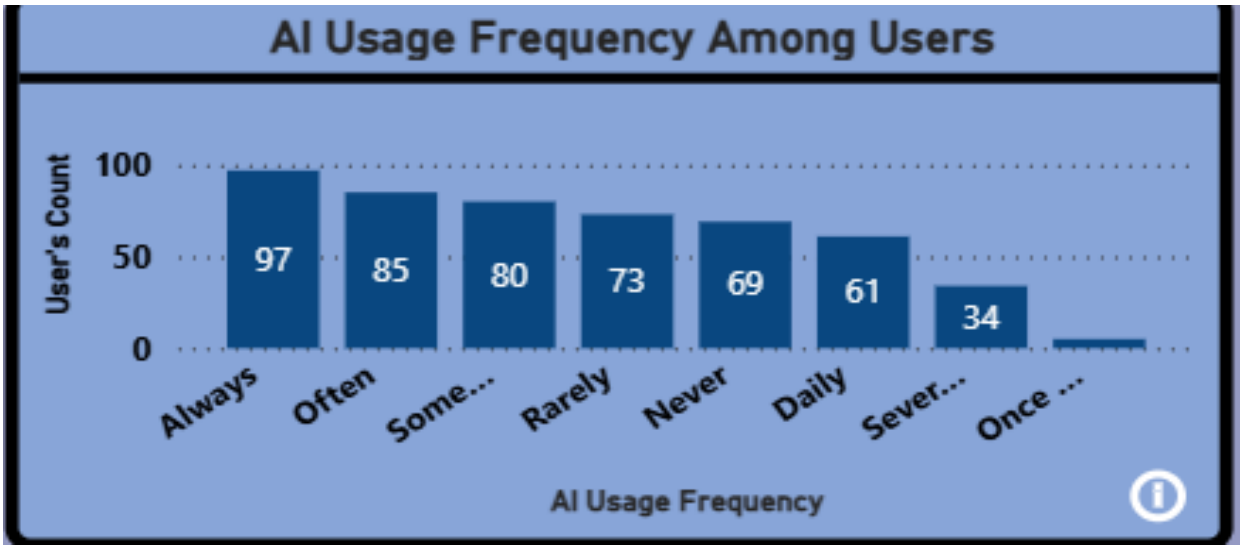
- Categorize and rank AI usage based on the number of users in each frequency group.
- Represent the data using a bar chart for easy comparison between categories.
- Clearly label each usage frequency on the chart for better readability.
- Display the number of users directly on each bar to avoid ambiguity.
- Maintain a simple and clean visual design to ensure the results are easy to interpret.

iii. Analysis Results:

The findings show that a large number of users interact with AI tools on a regular basis. The "Always" category has the highest number of users, followed closely by "Often", indicating strong dependence and familiarity with AI. A moderate level of usage is seen in the "Sometimes" and "Rarely" groups, suggesting that some users rely on AI only when needed. On the other hand, fewer users fall under "Seldom" and "Never", which indicates that complete avoidance of AI tools is relatively low. Overall, the results highlight a positive trend toward frequent AI usage among users.

iv. Visualization:

The results are presented using a bar chart titled "AI Usage Frequency Among Users." The chart clearly displays different usage categories along with the corresponding number of users. Data labels on each bar make it easy to understand the exact values at a glance. The visual comparison helps in quickly identifying which usage levels are most common, making the chart effective for presentations, reports, and decision-making purposes.



Objective 5: AI Usage Frequency Among Education

i. General Description:

This analysis focuses on understanding how Artificial Intelligence usage varies across different educational qualification levels. The objective is to examine which education groups use AI tools the most and how usage frequency changes with academic background. By comparing categories such as undergraduate, postgraduate, PhD, diploma, and school-level education, the study provides insights into AI adoption trends within the education sector.

ii. Specific Requirements:

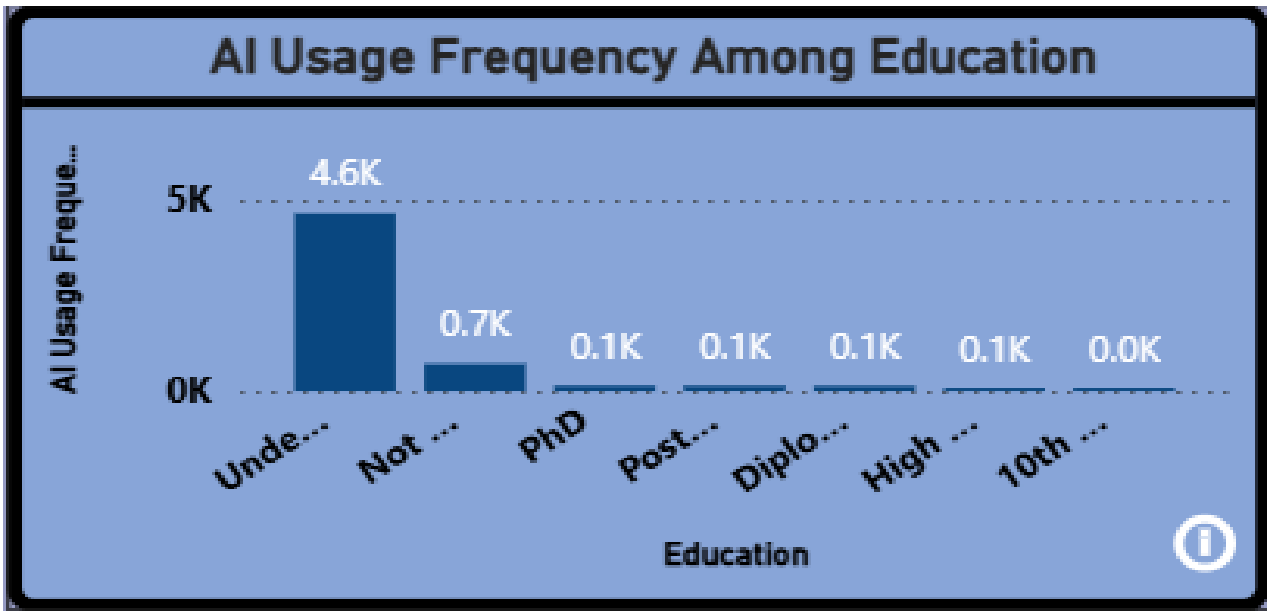
- Compare AI usage frequency across different education levels.
- Represent the data using a bar chart for clear visual comparison.
- Display education categories along the horizontal axis and usage frequency on the vertical axis.
- Include data labels on each bar to show exact usage values.
- Maintain a simple and readable chart layout for better understanding.

iii. Analysis Results:

The results indicate that **undergraduate students show the highest AI usage**, with a value of approximately **4.6K**, suggesting strong engagement with AI tools for learning, assignments, and skill development. Users with **no formal degree** show moderate usage at around **0.7K**, indicating growing interest in AI even outside traditional academic pathways.
In contrast, **postgraduate, PhD, diploma, and higher secondary groups** show significantly lower and nearly similar usage levels (around **0.1K** each). The **10th-grade level** records negligible usage. Overall, the findings suggest that AI adoption is most prominent among undergraduate learners, while higher academic levels show comparatively limited interaction with AI tools.

iv. Visualization:

The data is visualized using a bar chart titled **"AI Usage Frequency Among Education."** The chart clearly highlights differences in AI usage across education levels, with numeric labels displayed on each bar for clarity. The visualization makes it easy to identify the dominant user group and observe how AI usage declines across higher or lower educational categories. This Representation is effective for academic analysis, presentations, and understanding user behavior trends in education-based AI adoption.



Objective 6: AI Usage Frequency Among Education

i. General Description:

This analysis examines the level of human dependency on Artificial Intelligence in everyday activities. The objective is to understand how often individuals rely on AI for decision-making, problem-solving, and routine tasks. By categorizing dependency levels as *Always, Sometimes, Rarely,* and *Never*, the study highlights the extent to which AI has become integrated into human life.

ii. Specific Requirements:

- Analyze different levels of human dependency on AI.
- Represent the data using a donut (pie) chart for proportional comparison.
- Clearly label each dependency category for easy identification.
- Display percentage values to show the relative share of each group.
- Use a simple color scheme to improve visual clarity.

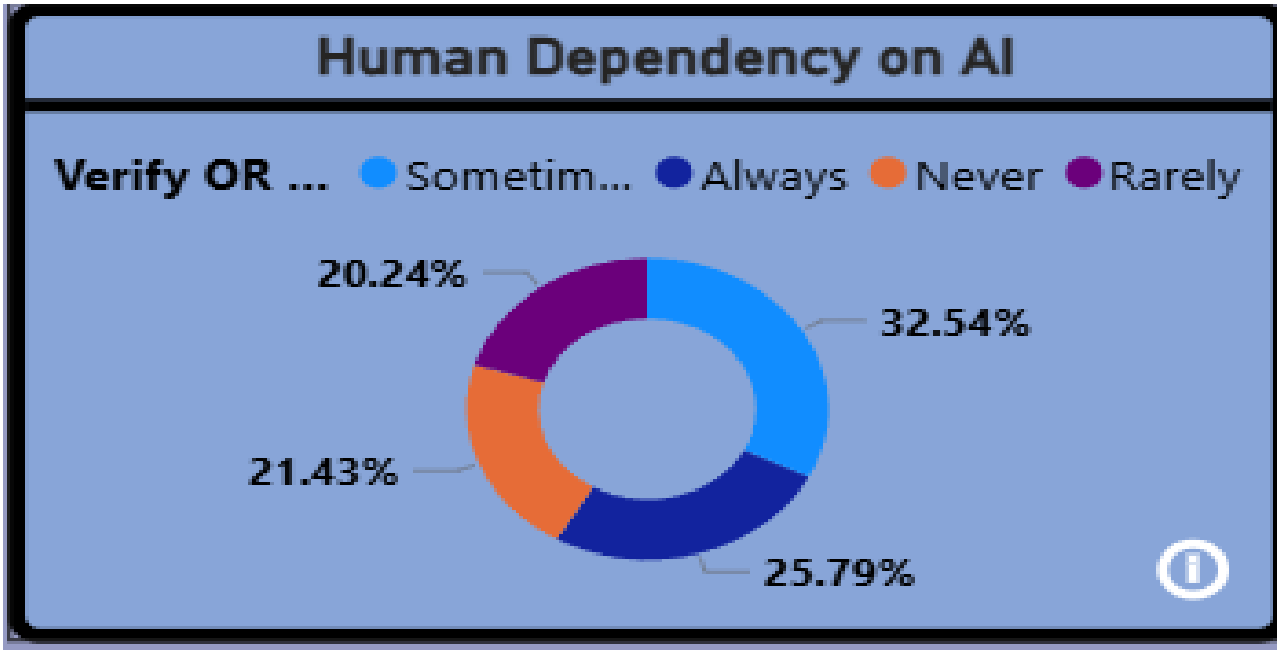
iii. Analysis Results:

The results show that a significant portion of users demonstrate a **high dependency on AI**. The **"Sometimes"** category accounts for the largest share at **32.54%**, indicating that many individuals rely on AI when needed rather than constantly. The **"Always"** category follows closely at **25.79%**, suggesting strong and consistent dependence among a considerable group of users. Moderate levels of independence are reflected in the **"Never" (21.43%)** and **"Rarely" (20.24%)**

categories. These findings suggest that while AI dependency is widespread, a notable segment of users still limits or avoids reliance on AI tools.

iv. Visualization:

The findings are illustrated using a donut chart titled **"Human Dependency on AI."** The chart effectively displays the proportional distribution of dependency levels through clearly differentiated segments and percentage labels. This visualization makes it easy to compare dependency patterns at a glance and supports better understanding of how deeply AI is embedded in human activities.



Objective 7: Average Study Hours Per Year

i. General Description:

This visualization presents an analysis of average study hours recorded per year over a given time period. The main objective is to examine how study behavior has evolved over the years and to identify any noticeable trends or shifts in learning patterns. By observing changes in study duration, the visualization helps in understanding the consistency of academic effort and the possible influence of external factors such as digital learning tools and AI adoption.

ii. Specific Requirements:

- **Monitor changes in average study hours across multiple years**
- **Represent time-based data using a line chart for clear trend analysis**
- **Highlight yearly increases or decreases in study duration**

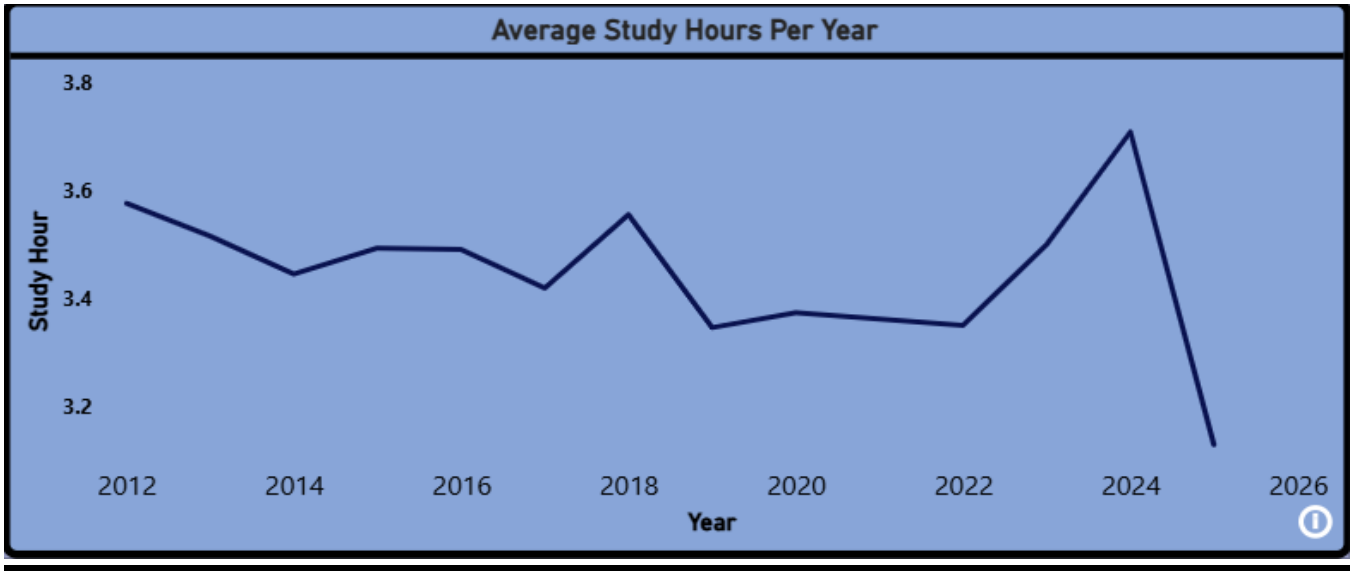
- **Ensure the visualization allows easy comparison between consecutive years**
- **Maintain clarity in axis labeling and data presentation for accurate interpretation**

iii. Analysis Results:

The analysis shows that average study hours remain largely stable over most of the observed years, indicating consistent study habits among users. Minor fluctuations are visible, suggesting small variations in academic workload or personal study routines. A noticeable rise in study hours around 2024 indicates a period of increased academic engagement. However, this is followed by a sharp decline in the most recent year, which may suggest a shift in learning behavior, changes in academic schedules, or increased reliance on alternative learning resources such as AI-based tools.

iv. Visualization:

The findings are illustrated using a line chart titled "Average Study Hours Per Year." The line chart effectively displays year-wise variations in study hours, making it easy to identify trends, peaks, and drops over time. This visualization supports clear interpretation of long-term study behavior patterns and helps in drawing meaningful conclusions regarding changes in academic effort.



Objective 8: Count of Full Name by AI tools used frequently

i. General Description:

This visualization analyzes the frequency of different Artificial Intelligence tools used by users to identify the most popular and widely adopted platforms. The objective is to understand user preferences for AI tools and to observe how general-purpose and specialized AI applications are being utilized across the user base.

ii. Specific Requirements:

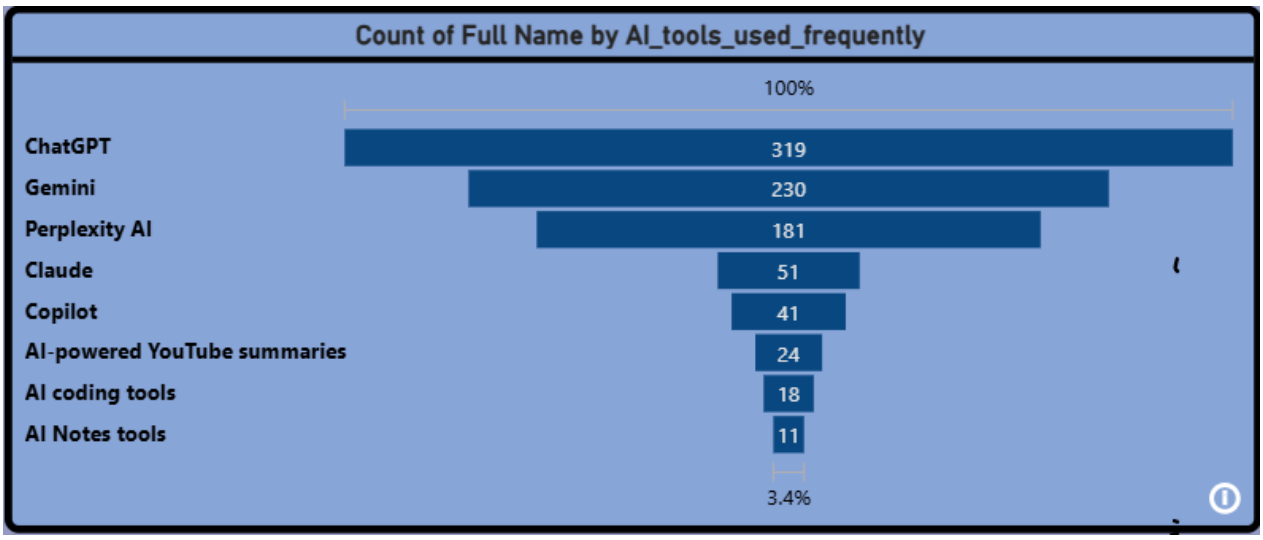
- Identify and compare AI tools based on usage frequency
- Rank AI platforms according to the number of users
- Use a horizontal bar chart for clear comparative analysis
- Display exact user counts on each bar
- Highlight dominant and less frequently used AI tools

iii. Analysis Results:

The results show that **ChatGPT** is the most frequently used AI tool, with **319 users**, indicating its strong popularity and widespread acceptance. **Gemini** follows as the second most used tool with **230 users**, while **Perplexity AI** ranks third with **181 users**.
In comparison, tools such as **Claude (51 users)** and **Copilot (41 users)** show moderate usage. Specialized tools like **AI-powered YouTube summarizers, AI coding tools, and AI notes tools** have significantly lower adoption, with usage counts below 25. This pattern suggests that users prefer **versatile, conversational AI platforms** over task-specific tools.

iv. Visualization:

A **horizontal bar chart titled "Count of Full Name by AI_tools_used_frequently"** was used to represent the data. The chart clearly ranks AI tools by user count, making it easy to identify the most popular platforms and compare their usage levels. This visualization effectively supports interpretation of AI tool adoption trends among users.



Objective 9: Purpose of Using AI Among Users

i. General Description:

This objective focuses on analyzing and ranking the primary purposes for which users adopt Artificial Intelligence tools. The aim is to understand how AI is utilized across different activities such as research, coding assistance, exam preparation, and skill development. By comparing user counts across various use cases, this analysis highlights dominant trends in AI adoption and provides insight into user priorities, learning behaviors, and practical applications of AI technologies.

ii. Specific Requirements:

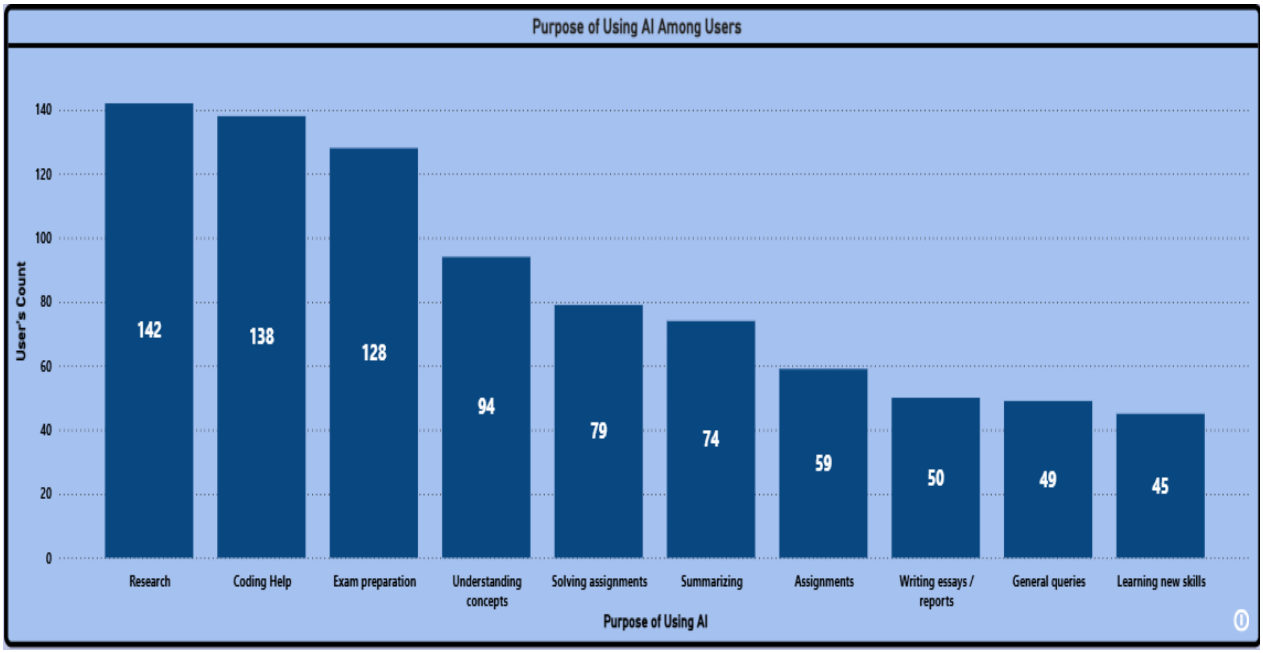
- Rank AI usage purposes based on the number of users.
- Use a vertical bar chart to visually compare different AI use cases.
- Clearly label each category (e.g., Research, Coding Help, Exam Preparation).
- Display user count values directly on the bars for better readability.
- Maintain a consistent color scheme to ensure clarity and visual appeal.

iii. Analysis Results:

The analysis shows that Research (142 users) and Coding Help (138 users) are the most prominent reasons for AI usage, indicating strong adoption in academic and technical domains. Exam preparation (128 users) and understanding concepts (94 users) also rank high, reflecting AI's growing role in education and learning support. Moderate usage is observed in solving assignments and summarizing content, while lower engagement appears in writing essays/reports, general queries, and learning new skills. Overall, the results suggest that users primarily rely on AI for knowledge enhancement and problem-solving rather than casual or exploratory tasks.

iv. Visualization:

A vertical bar chart titled “Purpose of Using AI Among Users” was developed to represent user engagement across different AI applications. The chart displays each purpose along the x-axis and user count on the y-axis, with numeric labels embedded inside the bars for immediate interpretation. The sorted layout enables quick comparison, emphasizing the most and least common AI usage patterns. This visualization effectively supports insights into user behavior and helps stakeholders understand where AI delivers the most value.



Objective 10: Factors Influencing AI Dependency

i. General Description:

This objective focuses on identifying the key demographic, technological, and behavioral factors that influence users’ dependency on Artificial Intelligence tools. The analysis explores how attributes such as education level, gender, preferred device, perceived AI-related risks, and usage purpose interact to shape patterns of AI reliance. By tracing these relationships, the visualization provides a holistic understanding of how AI dependency develops across different user segments.

ii. Specific Requirements:

• Analyze AI dependency across multiple dimensions including education, gender, device preference, perceived risks, and usage purpose.
• Use a Sankey-style flow visualization to illustrate relationships between user characteristics and AI

dependency factors.
• Highlight dominant education groups and device preferences contributing to AI reliance.
• Display risk perceptions such as over-dependency, plagiarism, privacy issues, and job threats.
• Enable interactive filtering to explore specific user segments and usage behaviors.

iii. Analysis Results:

The analysis reveals that undergraduate students form the largest group contributing to AI dependency, followed by postgraduate and diploma holders. Male users show slightly higher AI dependency compared to female users, while mobile and laptop devices dominate as preferred access points. Among perceived risks, over-dependency and plagiarism emerge as the most significant concerns, indicating ethical and academic apprehensions related to AI usage. In terms of purpose, AI dependency is most strongly associated with learning new skills, understanding concepts, and coding help, suggesting that reliance is primarily driven by educational and skill-based needs rather than casual use.

iv. Visualization:

A Sankey flow diagram titled “Factors Influencing AI Dependency” was developed to represent the interconnected pathways between user demographics, technology preferences, perceived risks, and AI usage purposes. The visualization begins with overall dependency counts and progressively branches into education level, gender, preferred device, risk perception, and usage intent. Interactive filters allow users to drill down into specific segments, making the visualization an effective tool for identifying high-risk dependency patterns and understanding how different factors collectively influence AI reliance.

6.Conclusion

The increasing integration of intelligence technologies in education has profoundly influenced students' learning habits, achievement, and engagement. As AI-driven learning platforms become more prevalent, it's crucial to understand how students interact with these tools and the impact on educational outcomes. However, extracting meaningful insights from extensive educational survey data can be challenging.

To tackle this, the project titled **"Impact of AI Tools on Student Learning"** leverages a dataset collected from a structured Google Form survey. The dataset is further enriched with AI-generated responses, enabling comprehensive exploratory data analysis and visualization. Data preparation, cleansing, and verification are performed using the Power Query Editor.

The processed data is then analyzed with Power BI, leading to the creation of innovative and interactive dashboards that offer a thorough evaluation of student engagement with AI tools. The dashboard allows users to:

- Examine trends in AI tool usage among students.
- Compare learning performance and participation levels across diverse student demographics.
- Visualize AI tool usage within different academic disciplines.
- Identify key factors influencing student performance and satisfaction.
- Conduct pairwise comparisons of learning effectiveness before and after AI tool implementation.

Users can explore various demographics, educational levels, and AI tool types through interactive filters. By combining data preprocessing techniques with dynamic visual exploration, the project ensures transparency and deep insights into emerging patterns and trends.

Ultimately, this project demonstrates how advanced data analysis and visualization tools can transform a simple educational survey dataset into meaningful, actionable insights. It underscores the potential of data-driven decision-making in enhancing educational methodologies through AI technology.

7. Future Scope

The **"Impact of AI Tools on Student Learning"** project establishes a strong foundation for understanding how artificial intelligence influences student engagement, learning behavior, and academic performance. To further enhance its analytical depth, scalability, and real-world relevance, the following future developments are proposed:

1. Expansion of Survey Dimensions

Future datasets can include additional variables such as learning styles, subject difficulty levels, time spent using AI tools, and assessment types. This would enable more granular insights into how AI usage varies across academic contexts and learner preferences.

2. Longitudinal Data Collection

Instead of a single-time survey, collecting data across multiple academic terms would allow longitudinal analysis. This would help track changes in learning performance, dependency patterns, and satisfaction levels as students continue to adopt AI tools over time.

3. Real-Time Learning Analytics Integration

Integrating real-time learning data from Learning Management Systems (LMS) such as attendance, assignment submission trends, and quiz performance could provide a more accurate picture of how AI tools impact academic outcomes in practice.

4. Advanced Performance and Satisfaction Modeling

Future versions can incorporate predictive models to analyze how different factors—such as AI tool type, frequency of use, and purpose—affect student performance and satisfaction. This would support early identification of both high-impact learning strategies and potential over-dependence risks.

5. AI Risk and Ethics Impact Analysis

Building on existing risk-related variables (plagiarism, over-dependency, privacy concerns), future dashboards can quantify ethical impacts and correlate them with academic outcomes, helping institutions design responsible AI usage guidelines.

6. Cross-Disciplinary Usage Analysis

Expanding the dataset to include detailed academic disciplines will allow comparison of AI effectiveness across fields such as engineering, humanities, healthcare, and business—highlighting where AI delivers the greatest educational value.

7. Machine Learning for Student Outcome Prediction

Applying machine learning algorithms to historical survey and performance data can help predict learning outcomes, identify at-risk students, and recommend personalized AI-assisted learning pathways.

8. Open and Scalable Dashboard Framework
The Power BI dashboard can be transformed into a reusable, open framework that educational institutions can adapt with their own datasets. This would promote collaborative research, benchmarking, and evidence-based policy formulation.

With these enhancements, the project can evolve from a survey-based analytical study into a **decision-support system for AI-enabled education**. It has the potential to guide educators, policymakers, and institutions in optimizing AI adoption while maintaining ethical standards and improving overall learning effectiveness.

8.LINKEDIN

LINKEDIN Link:https://www.linkedin.com/posts/sakshisinha1_powerbi-dataanalysis-aiineducation-activity-7404874369958752256-VD4A?utm_source=share&utm_medium=member_desktop&rcm=ACoAAEfSEDMB4v8MGFFfiH8NtDwYFvSVTfLjS7s

9.GITHUB

GITHUB LINK:-https://github.com/sakshisinha15/PowerBICA2

10.GOOGLE DRIVE LINK:-

Google Drive Link:-https://drive.google.com/drive/folders/1__bJBvXsrv--4jl4Obk3LUozophpwfg6?usp=sharing

10.REFERENCES

- ***Primary Data Source – Student Survey (Google Form)***

  Website:
  https://docs.google.com/forms/d/e/1FAIpQLSeQ1gKTsj7jjASK7bc5vMwS8FmhGR8_0ER6qT_ZwBmvtquqqg/viewform
  The primary dataset for this project was collected through a structured Google Form designed to capture students' demographics, AI tool usage patterns, learning purposes, perceived risks, and academic impact. This self-collected data ensures relevance, originality, and direct alignment with the project objectives.

- ***Microsoft Power BI – Data Analysis and Visualization Platform***

  Used for data modeling, exploratory analysis, and development of interactive dashboards. Power BI enabled dynamic filtering, drill-through analysis, and intuitive visual storytelling to evaluate the impact of AI tools on student learning behavior and performance.

- ***Microsoft Excel & Power Query Editor***

  Utilized for data cleaning, preprocessing, validation, and transformation. Power Query ensured data consistency and prepared the survey responses for seamless integration into Power BI.

- ***Academic & Educational AI Research Resources***

  Secondary insights were referenced from publicly available academic literature and reports on AI in education to support interpretation of trends related to student engagement, learning outcomes, and ethical concerns such as over-dependency and plagiarism.

- ***Synthetic Data Generation – ChatGPT***

  In addition to the primary survey data collected through a structured Google Form, synthetic data was generated using ChatGPT to enrich the dataset and support comprehensive exploratory data analysis. The synthetic responses were designed to mirror realistic student behavior patterns, usage frequencies, learning purposes, and perceived risks related to AI tools. This approach helped address data sparsity, improve category balance, and enable more robust visualizations and comparisons, while ensuring that no real personal data was compromised.