

# Interacting with AI in Education

*Analysing Undergraduate Student Engagement with Cipherbot  
Among 74 Undergraduate Business Students*

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# Overview

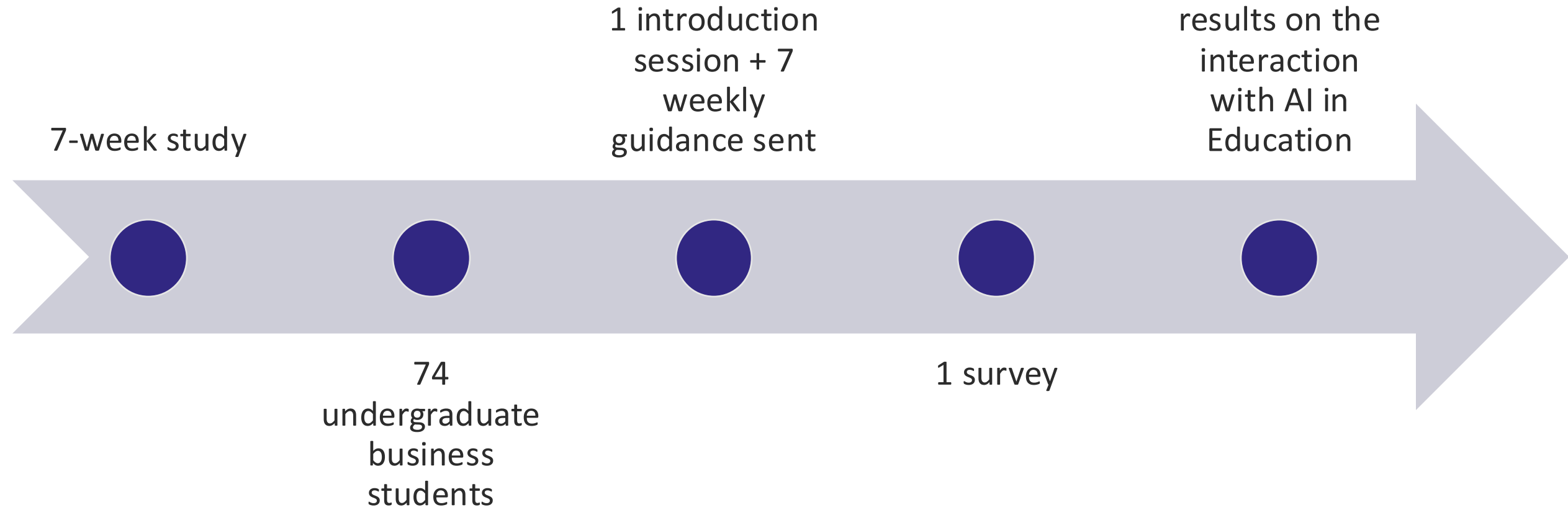
7-week study

1 introduction  
session + 7  
weekly  
guidance sent

results on the  
interaction  
with AI in  
Education

74  
undergraduate  
business  
students

1 survey



# Research questions

RQ1: How do student background factors drive their Cipherbot usability?

RQ2: How did student students interact with Cipherbot for education?

RQ3: What factors should AI developers consider when designing AI chatbots to maximize student interaction?

# Key Theory

- Educational Chatbot
- Application of AI in education, mostly in teaching languages and K12
- User study
- Chatbot Usability Scale
- Ten Items Personality Points

# What is Cipherbot?

Cipherbot is an educational chatbot using an LLM to address student queries concerning learning materials uploaded by the educator.

Cipherbot

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Back to Home

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Add Collaborator

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Materials

Chat History

Students

99 materials

705 conversations

40 students

Dashboard

Materials

Students

Chat History

Upload

	COLUMNS	FILTERS	DENSITY	EXPORT			
Material Name	Original Filename	Lecture Date	Theme	Viewable	Status	Uploaded Date	Actions
MKT20032 Week 9 Lesson-1 (1)	MKT20032 Week 9 Lesson-1 (1).pdf			true	active	02/29/2024, 01:22 PM	
RY_eMarketing_ed7_54-79	RY_eMarketing_ed7_54-79.pdf			true	active	02/29/2024, 12:38 PM	
RY_eMarketing_ed7_80-107	RY_eMarketing_ed7_80-107.pdf			true	active	02/29/2024, 12:38 PM	
RY_eMarketing_ed7_108-143	RY_eMarketing_ed7_108-143.pdf			true	active	02/29/2024, 12:38 PM	
RY_eMarketing_ed7_144-177	RY_eMarketing_ed7_144-177.pdf			true	active	02/29/2024, 12:38 PM	
MKT20032 Week 5 Lesson-1 (1)	MKT20032 Week 5 Lesson-1 (1).pdf			true	active	02/29/2024, 01:07 PM	

Cipherbot

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Most Active Students

Most Cited Materials

RY\_eMarketing\_ed7\_80-107  
RY\_eMarketing\_ed7\_80-107.pdf

51 times

MKT20032 Week 4 Lesson (1)  
MKT20032 Week 4 Lesson (1).pdf

32 times

RY\_eMarketing\_ed7\_1-53  
RY\_eMarketing\_ed7\_1-53.pdf

23 times

Customer-Journey-Maps-WP-2015-Silverpop  
Customer-Journey-Maps-WP-2015-Silverpop.pdf

18 times

MKT20032 Week 3 Lesson (3)  
MKT20032 Week 3 Lesson (3).pdf

17 times

Message Types

Most Asked Topic Inquiry Category

Answered / Non-answered Topic Inquiry

# Study Design

- Students are asked to use an AI-based Chatbot called Cipherbot in their study.
- Students would interaction with Cipherbot in their study and data is collected throughout the course

## 1. Teacher Uploads Study Materials

Teacher uploads the necessary study materials to the Cipherbot platform.



## 2. Student Asks Questions on Cipherbot

Students interact with Cipherbot by asking questions based on the study materials.



## 3. Cipherbot Provides Answers

Cipherbot analyzes the questions and provides accurate answers using the uploaded materials.

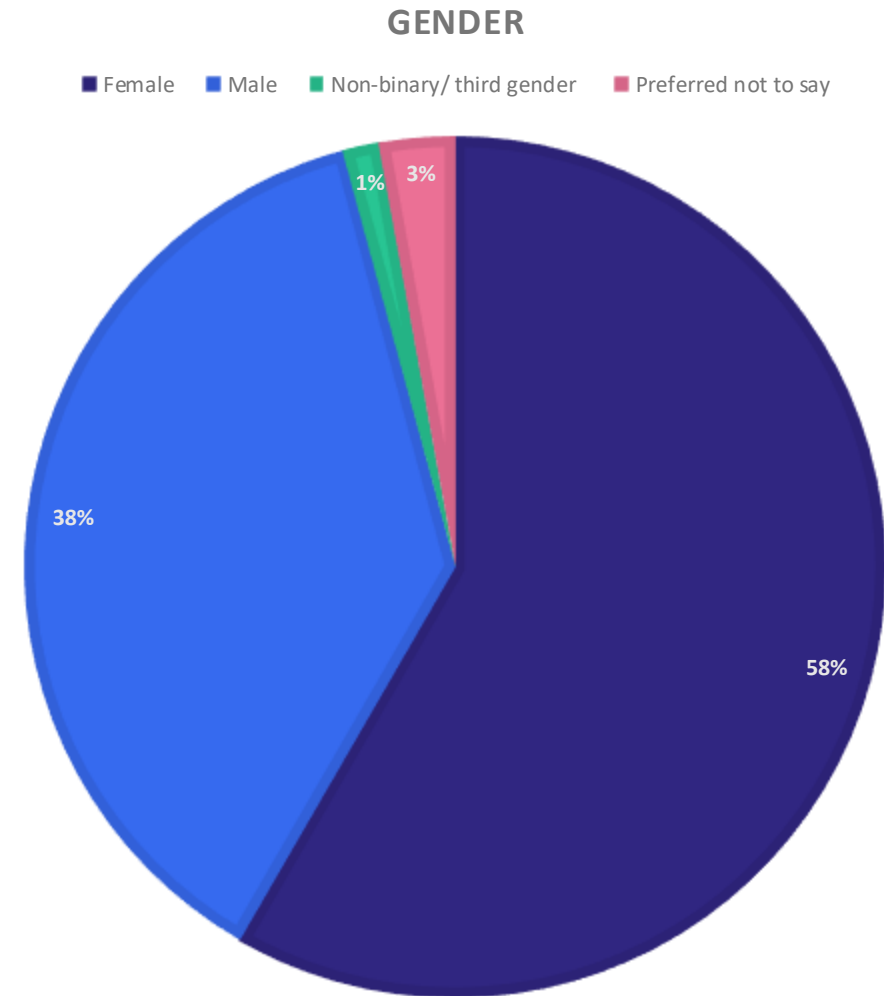


## 4. Teacher Reviews and Improves Materials

Teacher can review student interaction and improve teaching materials based on feedback.

# Participants

- 74 participants have signed the consent form and 72 have filled in the final survey
- All students were Vietnamese (n = 72, 100%). The average age of the participants was 20.54% (SD = 1.38)
- Female (n = 42, 58.3%), Male (n = 27, 37.5%), non-binary/ third gender (n = 1, 1.38%) and two preferred not to mention their genders (n = 2, 2.76%)
- Note: to reduce potential biases, we informed students with clear guidance regarding the purpose of the study and assured participants of identity anonymity before attending the study



# Data Collection

## Survey

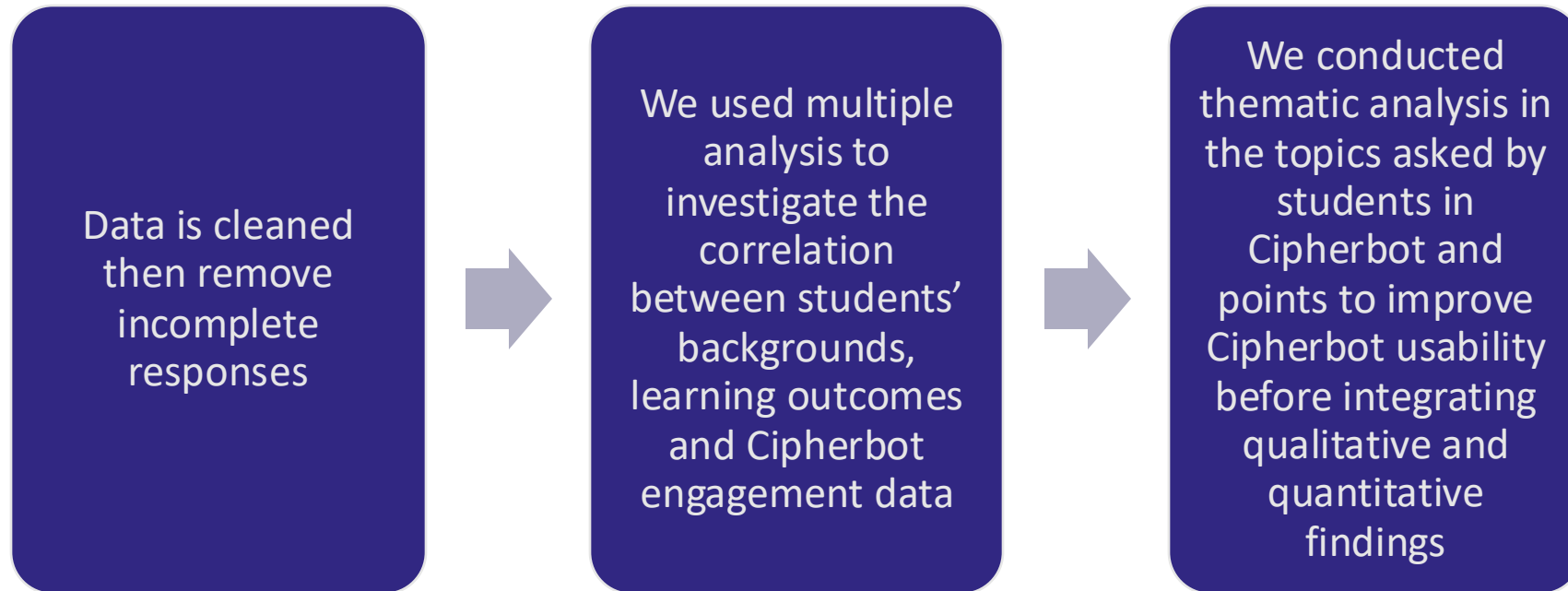
- Collected by the end of the course
- The survey specified three main sections:
  - (1) Self-evaluate learning outcomes (Content, structure, delivery and practical measurements of the course)
  - (2) Cipherbot Usability (based on the Chatbot Usability Scale – CUS)
  - (3) Participants' background variables (Gender, Age, Personality (using the ten-item personality inventory, called TIPI (Gosling et al., 2003) and Learner types (Estaji & Nafisi, 2014))

## Data from Cipherbot

- Students received the class code and guidance on how to use Cipherbot during the introduction session
- The data is collected via students' engagements with Cipherbot via teacher account
- Data included questions asked, responses, interactions, follow up action, citation used, ect.

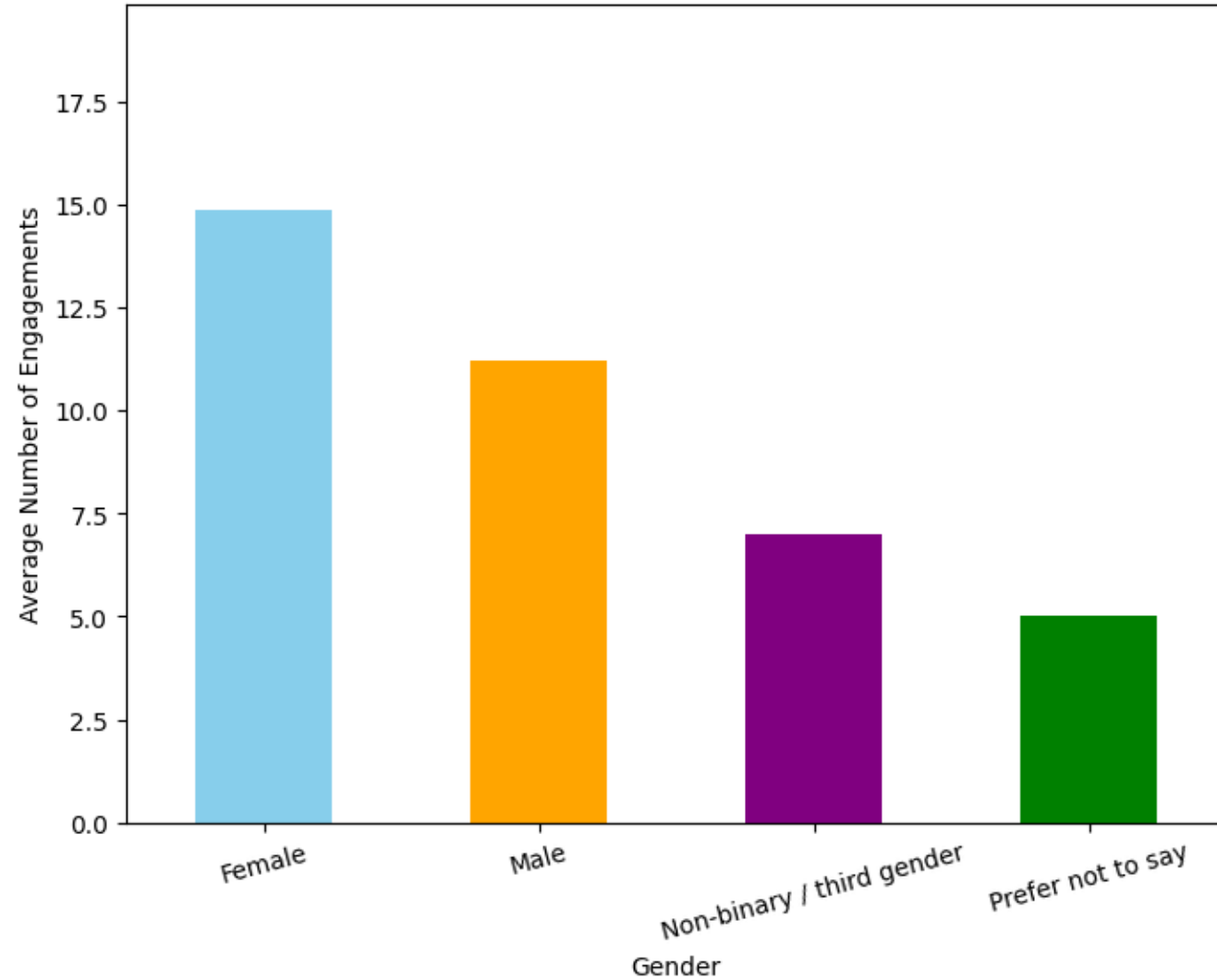
# Data Analysis

- We employed a mixed-method approach, combining quantitative analysis of survey data with qualitative analysis of the open-ended questions
- The dataset has the responses from 72 undergraduate students.

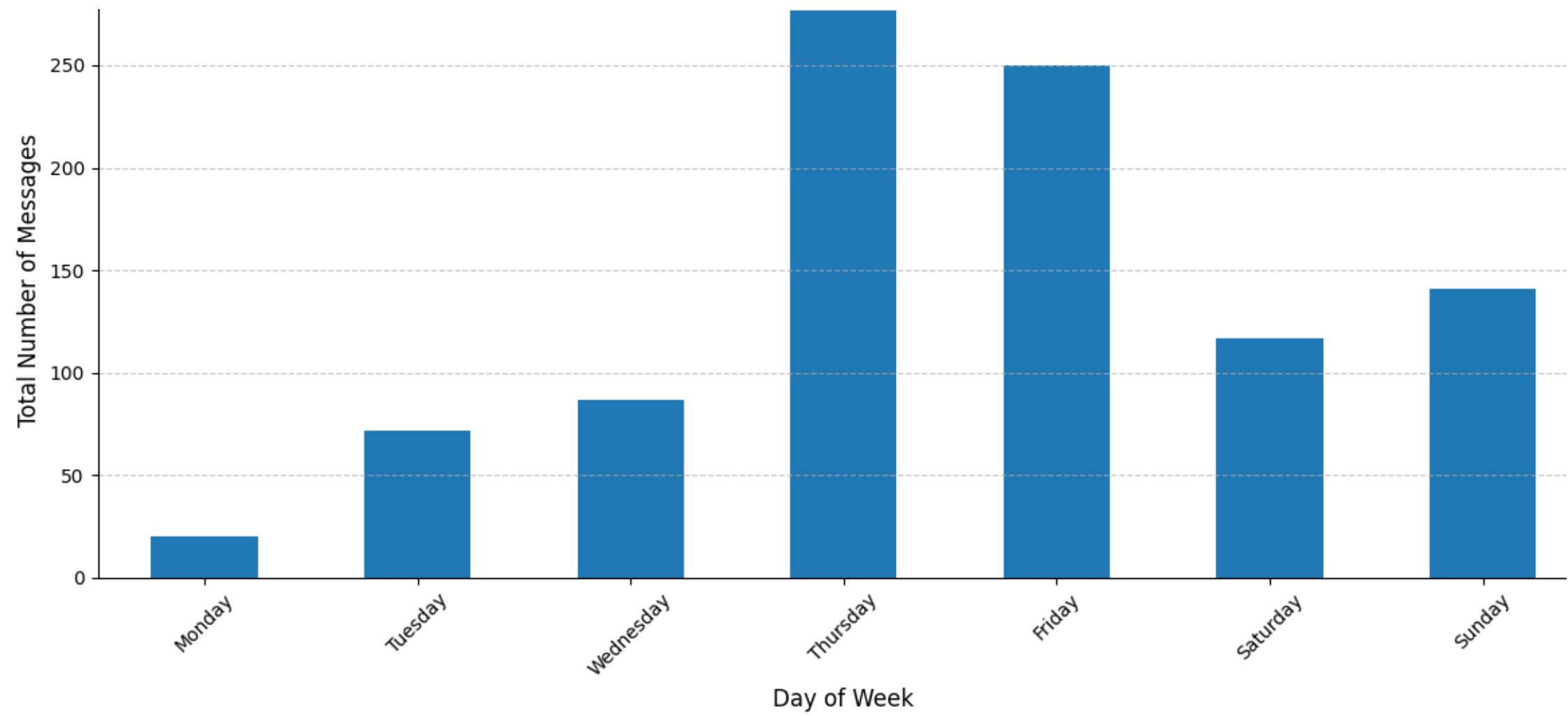


# Findings

Female tends to spend more time with Cipherbot



Students use Cipherbot immediately in class (all classes happen on Thursday)



# The popular purposes of using Cipherbot

Clarifications on Content	435	44.56%
Application of Knowledge	210	21.52%
Deepening Understanding	108	11.07%
Assignment and Homework Assistance	85	8.71%
Follow up questions	60	6.15%
Discussion Case study	40	4.1%
Current Events and Applications	26	2.66%
Connections to Other Topics	12	1.23%

## Cipherbot needs to improve further in the following function

Theme	Description	Frequency	%
Slow response time	Students reported long loading times and slow responses, making Cipherbot feel sluggish compared to other AI tools.	8	27%
Errors and inconsistencies	Students experienced errors and inconsistencies, with some information being unavailable or requiring multiple attempts to retrieve.	7	23%
Need for more specific and practical information	Students want more detailed and practical examples, as responses often felt too broad or general.	6	20%
User experience and user interface	Feedback suggested improvements to the interface and interaction design to make the bot more engaging and user-friendly.	5	17%
Desire for expanded knowledge base	Students requested more comprehensive knowledge, including insights from external sources and other courses.	4	13%

# Practical Implication

- Using Cipherbot as a virtual tutor
- Based on the popular purposes, it is important to use Cipherbot for self-studying and potential application in E-learning and blended learning

# Limitations and future work

The result indicated that Cipherbot has potential in terms of engagement and usability. However, further research is needed to be used as a part of the class setup:

- (1) Teaching assistant/ agent feature (Smutny & Schreiberova, 2020)
- (2) Evaluations of student performance (Drobnjak et al., n.d.)
- (3) The level of effectiveness between using Cipherbot and other AI platforms like ChatGPT or Gemini. '

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**Thank you for listening**

# Elements Slide

Copy paste the elements below into your presentation as required.

*AI, Generative AI, LLMs, educational chatbots, user study, and evaluation.*

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