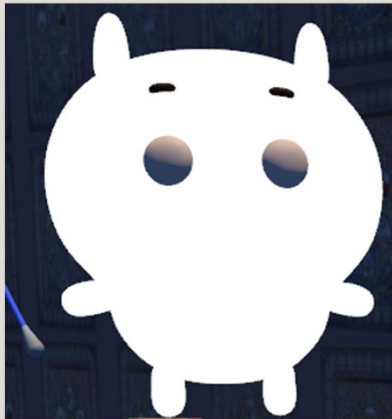# The Development of an AI Counselor in the Metaverse and Classification of Conversational Content

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Self-introduction

In my research, I aim to address various issues in the information society, such as cybercrime, cyberbullying, and the spread of fake news. This involves exploring the morality of AI and information education in an era where drones and AI robots are becoming increasingly common. Additionally, my study focuses on the evolving relationship between humans and new Internet of Things (IoT) technologies, such as the internet, smartphones, and humanoid robots. A significant aspect of my work also includes the analysis of psychological behaviors and patterns on the internet.

INTRODUCTION

- In recent years, the number of students experiencing school refusal has been increasing rapidly.
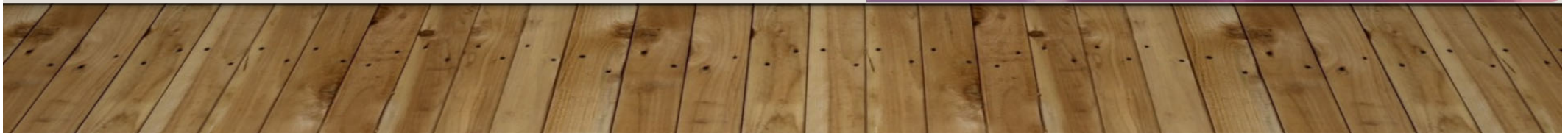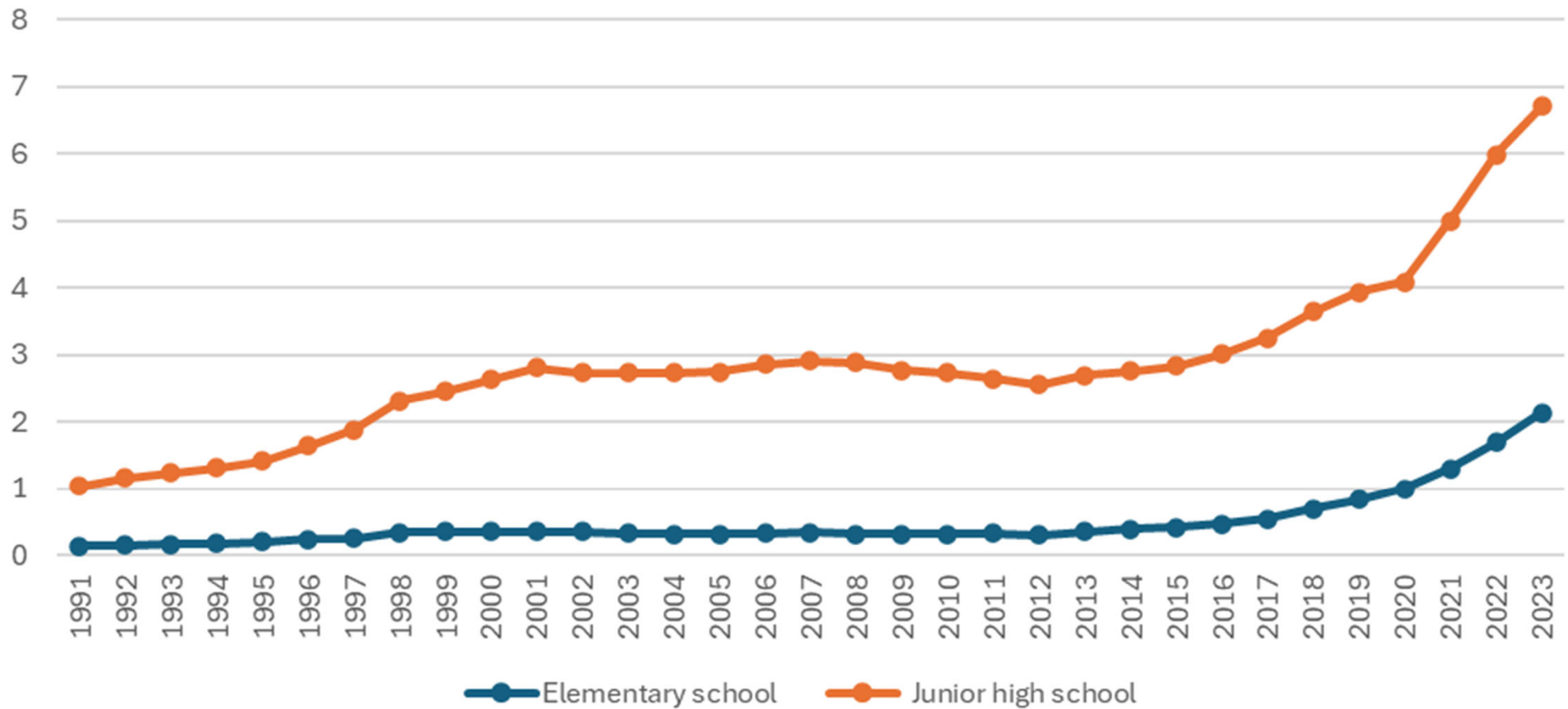
FIG. 1.   PERCENTAGE OF STUDENTS
WITH SCHOOL REFUSAL
(THE HORIZONTAL AXIS SHOWS THE YEAR AND THE VERTICAL AXIS SHOWS THE PERCENTAGE.)

BULLYING AND SUICIDE

Cyberbullying has the characteristic of spreading in a decentralized and rapidly expanding manner (Kanoh, 2014)
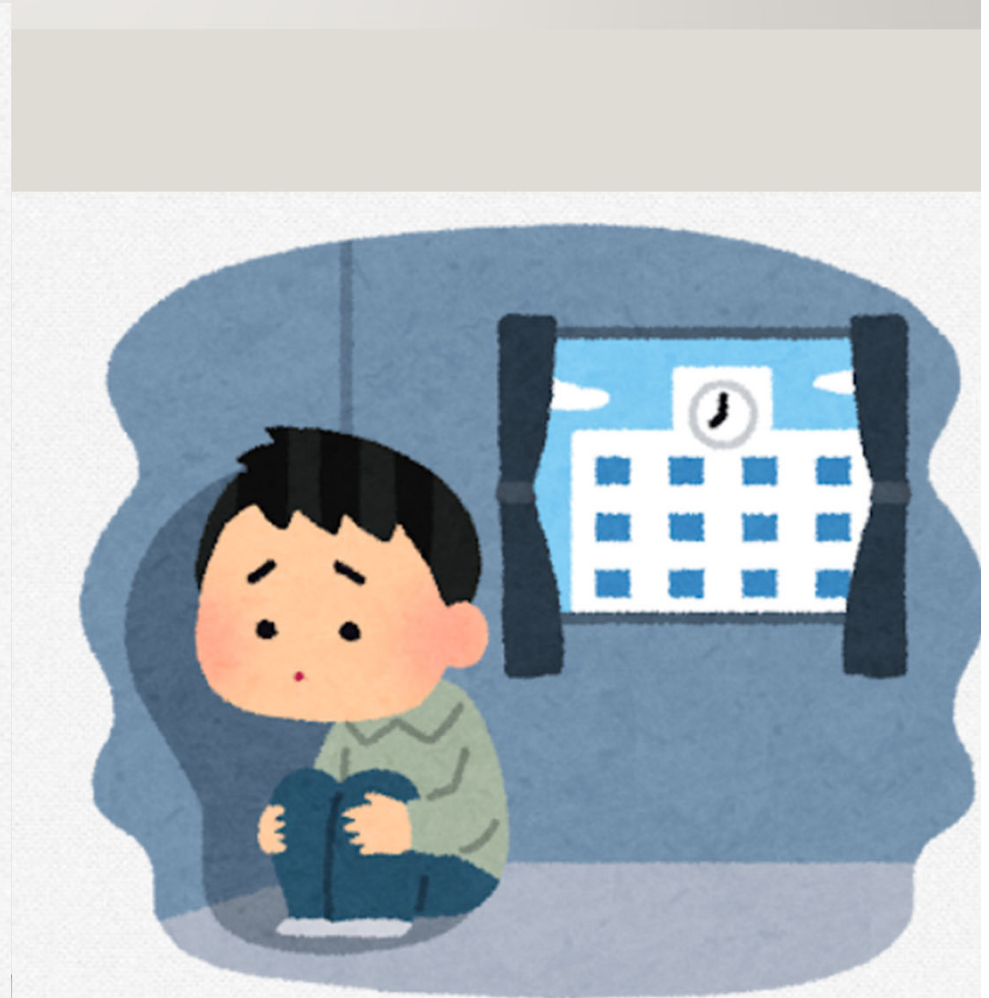
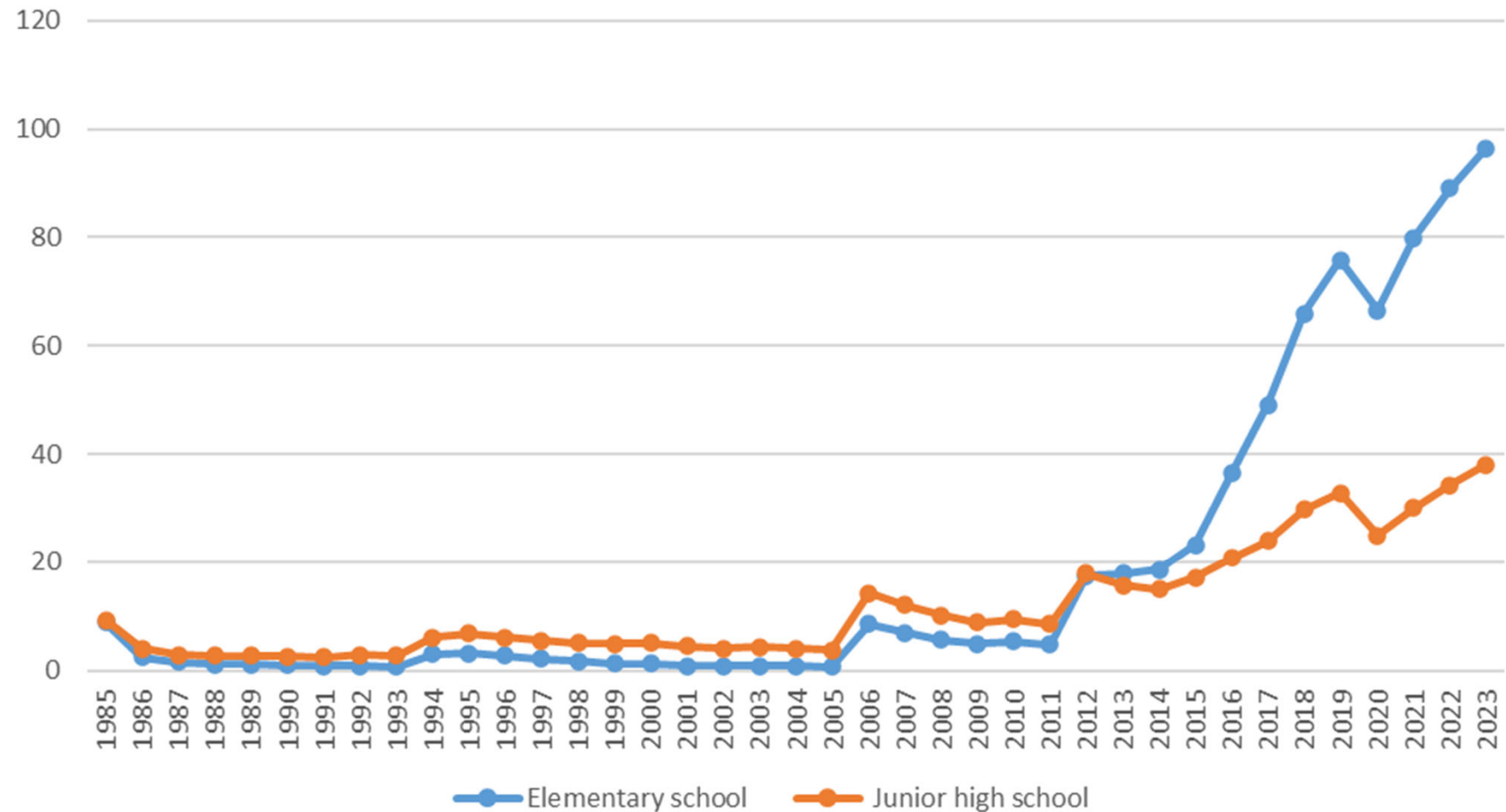# FIG. 2. NUMBER OF REPORTED BULLYING INCIDENTS PER 1,000 STUDENTS, BY SCHOOL LEVEL
(ELEMENTARY AND JUNIOR HIGH SCHOOL)

- Amidst this grave situation, ensuring that children experiencing school refusal are not excluded from education remains an urgent priority.
- A critical issue in the education field is how to create an inclusive educational environment for students experiencing school refusal.
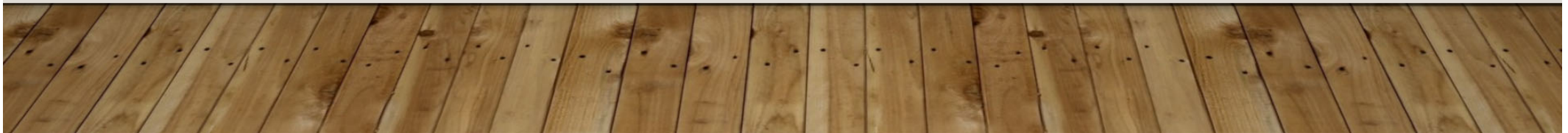
Purpose of the Study

- Develop an AI counselor (Hironya AI) within the Metaverse

- Provide consultation and support

- Classify user dialogues

METAVERSE

- The term "Metaverse" is defined as a three-dimensional virtual environment within a digital space, where users can interact with one another and participate in various activities via avatars and user interfaces.

- The concept is a portmanteau of "meta (meaning "beyond")" and "universe," providing a space that surpasses physical constraints.

- The Metaverse has a wide range of applications, including entertainment, education, business, and social interactions (Durt, C., 2022).

- Around 20 years ago, Linden Lab's Second Life was the leading platform; however, since then, numerous metaverse environments have proliferated.
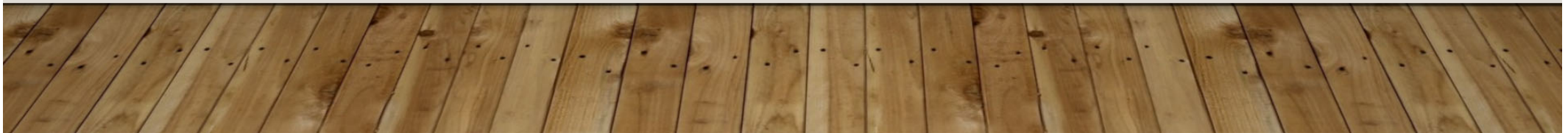
METAVERSE EMPHASIZING ENTERTAINMENT AND GAMEPLAY
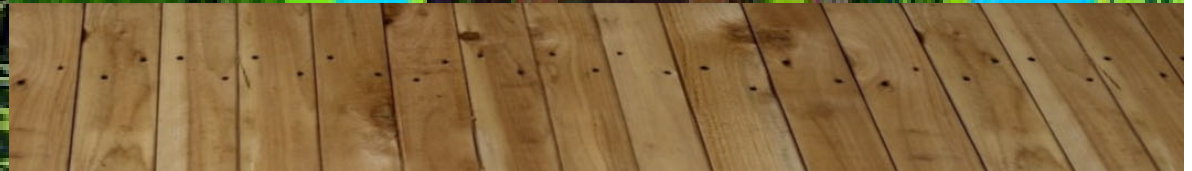
SOCIALLY INTERACTIVE METAVERSE

CORPORATE PUBLIC RELATIONS-FOCUSED METAVERSE
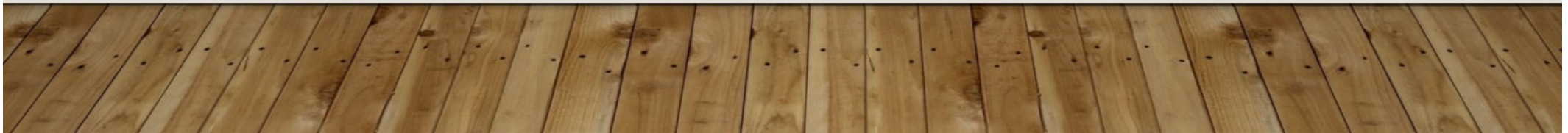
METAVERSE PLATFORM SELECTION

- In this study, particular emphasis was placed on dialogue and interaction in education, leading to the selection of Cluster.

- The platform was chosen for its key feature of allowing users to actively create their own Metaverse worlds, as well as its well-established Japanese-language support and capacity to accommodate a large number of users.

AVATARS AND AI CHARACTERS

- In the Metaverse, a key characteristic is that users engage in activities through avatars, their digital embodiments.

- This allows for text-based chat, voice communication, and, moreover, real-time communication through visual and auditory experiences in VR (Virtual Reality) and AR (Augmented Reality).

- Such an environment provides a space for activities and experiences that are difficult to achieve in the physical world and is generating new value in the social and economic domains.

ROLE OF AVATARS

- In other words, avatars are not merely symbolic representations of users.

- They serve as a crucial element in the establishment of social roles and identity formation within the Metaverse, as well as enabling self-expression and interaction with others (Messinger, P. R., et al., 2008).

ROLE OF AVATARS

- First, avatars fulfill the role of materializing users' actions within the Metaverse.

- By using avatars, users can overcome physical limitations and move freely, engage in conversations, and interact with or obtain virtual items.

- Avatars function as a tool that reflects users' physical expressions and movements and play a role in visually expressing their intentions and emotions (Riis, M., 2016).

ROLE OF AVATARS

- Second, avatars serve as an important medium for constructing social identity.

- With-in the Metaverse, elements such as appearance, accessories, clothing, and even body language allow users to express their individuality and create impressions on others.

- For example, in educational Metaverse spaces, avatars can be customized to represent teachers or students with appropriate attire and characteristics, facilitating role division, maintaining order, and improving communication efficiency (Kyrlitsias et al., 2022).

ROLE OF AVATARS

- Furthermore, avatars play a role in influencing users' psychological aspects.

- Interacting through avatars provides a sense of anonymity and freedom in self-expression, which may be harder to achieve in face-to-face interactions.

- This allows users to express their true personalities and opinions more openly.

- As a result, avatars serve as a bridge for building relationships, fostering cooperation, and encouraging empathy (Kyrlitsias et al., 2022).

ROLE OF AVATARS

- Additionally, avatars within the Metaverse fulfill professional roles in designated domains such as education, psychotherapy, and business.

- For example, in the field of education, teacher avatars can engage in dialogue and provide instruction to learners, offering a learning experience akin to face-to-face instruction.

- As a result, interactive learning—previously difficult to achieve in traditional online education—is realized, and it is anticipated to improve learners' understanding and focus (Spoden, C. & Ema, A., 2024; Al-Emran, M., 2024).

FOR EXAMPLE,

- In the education sector, students can gather in virtual classrooms within the Metaverse, where they can attend lessons, go on virtual picnics with friends, or enjoy watching the sunset together (Kanoh, 2023).
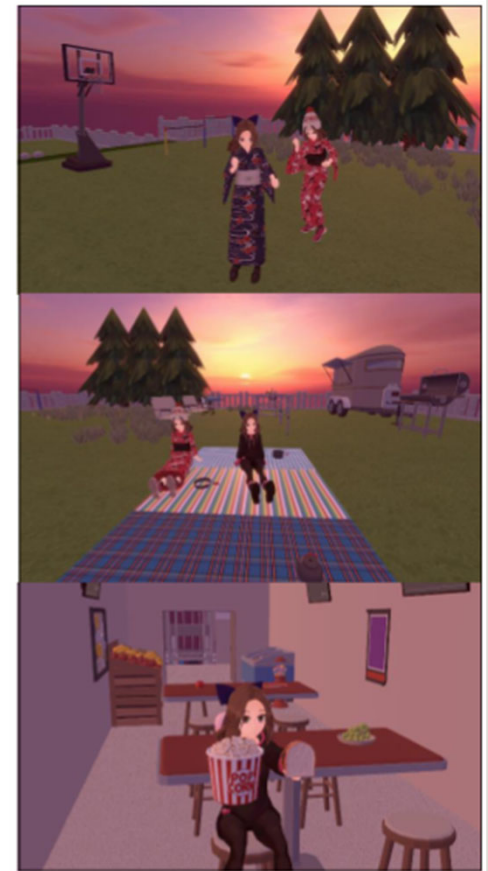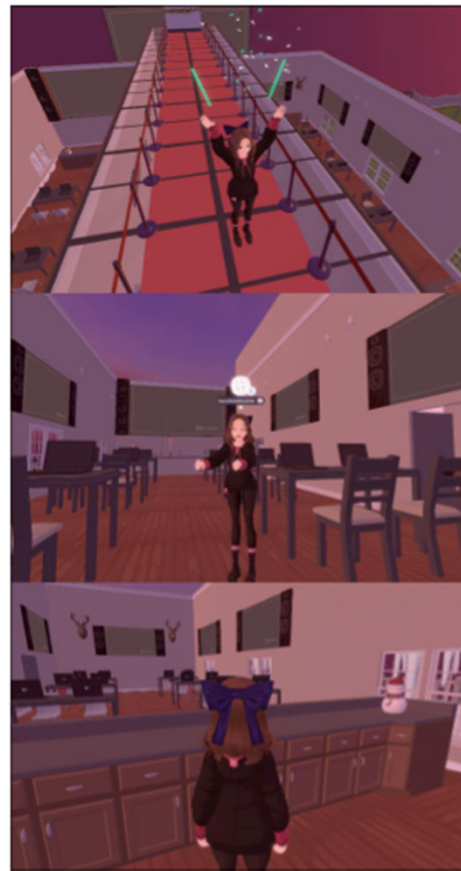
ROLE OF AVATARS AND AI CHARACTERS
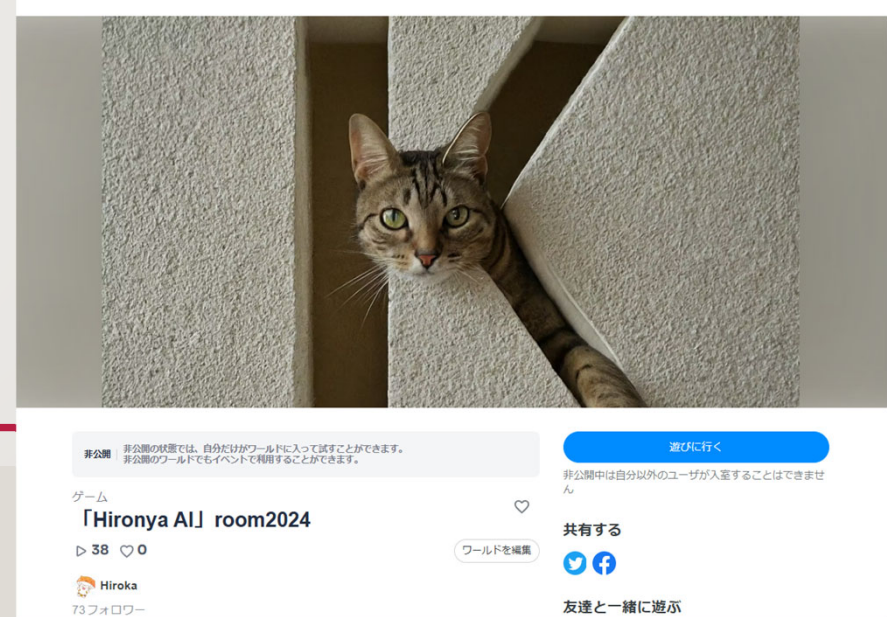
- Accordingly, avatars in the Metaverse are not merely digital representations of users, and they also play an essential role in identity formation, social interactions, and professional applications across various domains, including education and business.

DESIGN OF HIRONYA AI

- Animal-like avatar to ease anxiety

- Built using Unity and Cluster
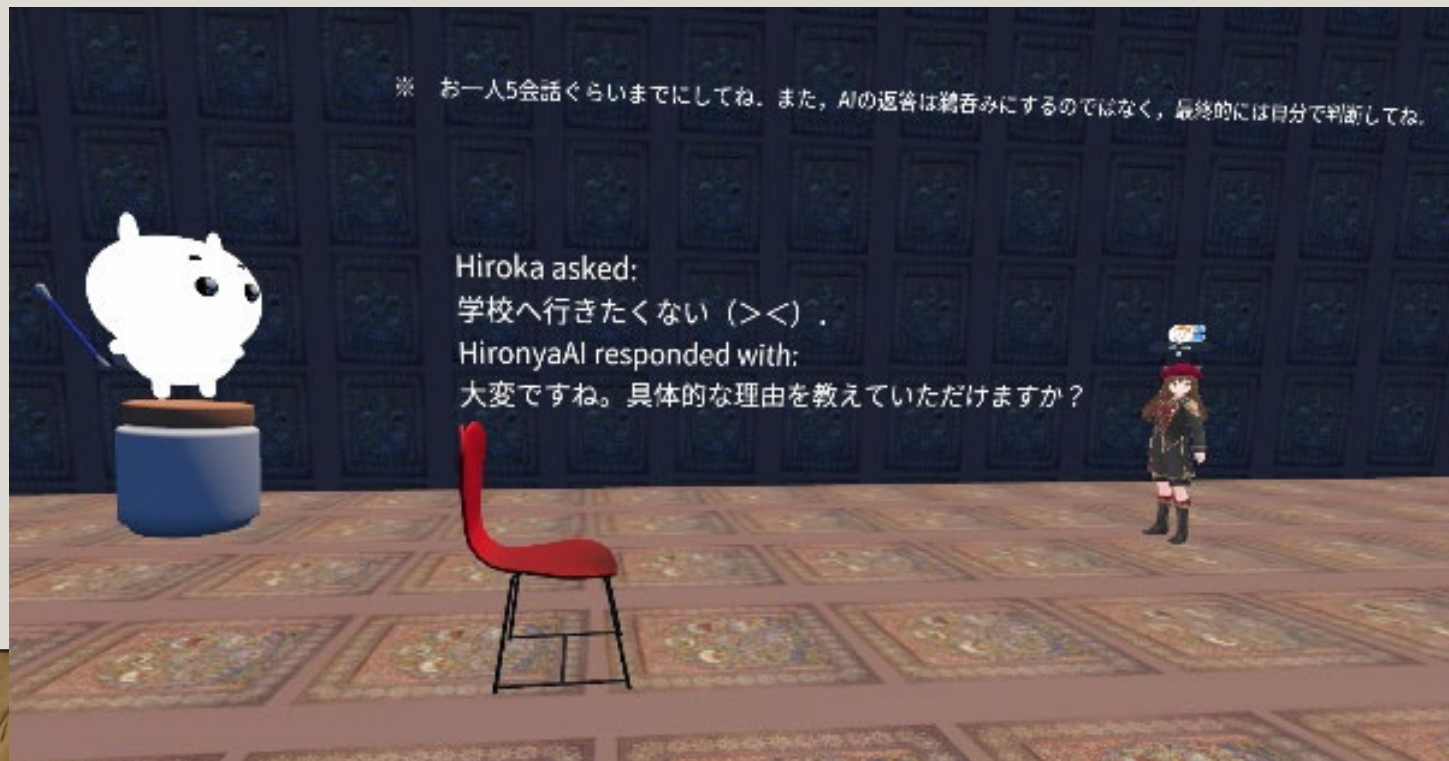
EXAMPLE INTERACTION
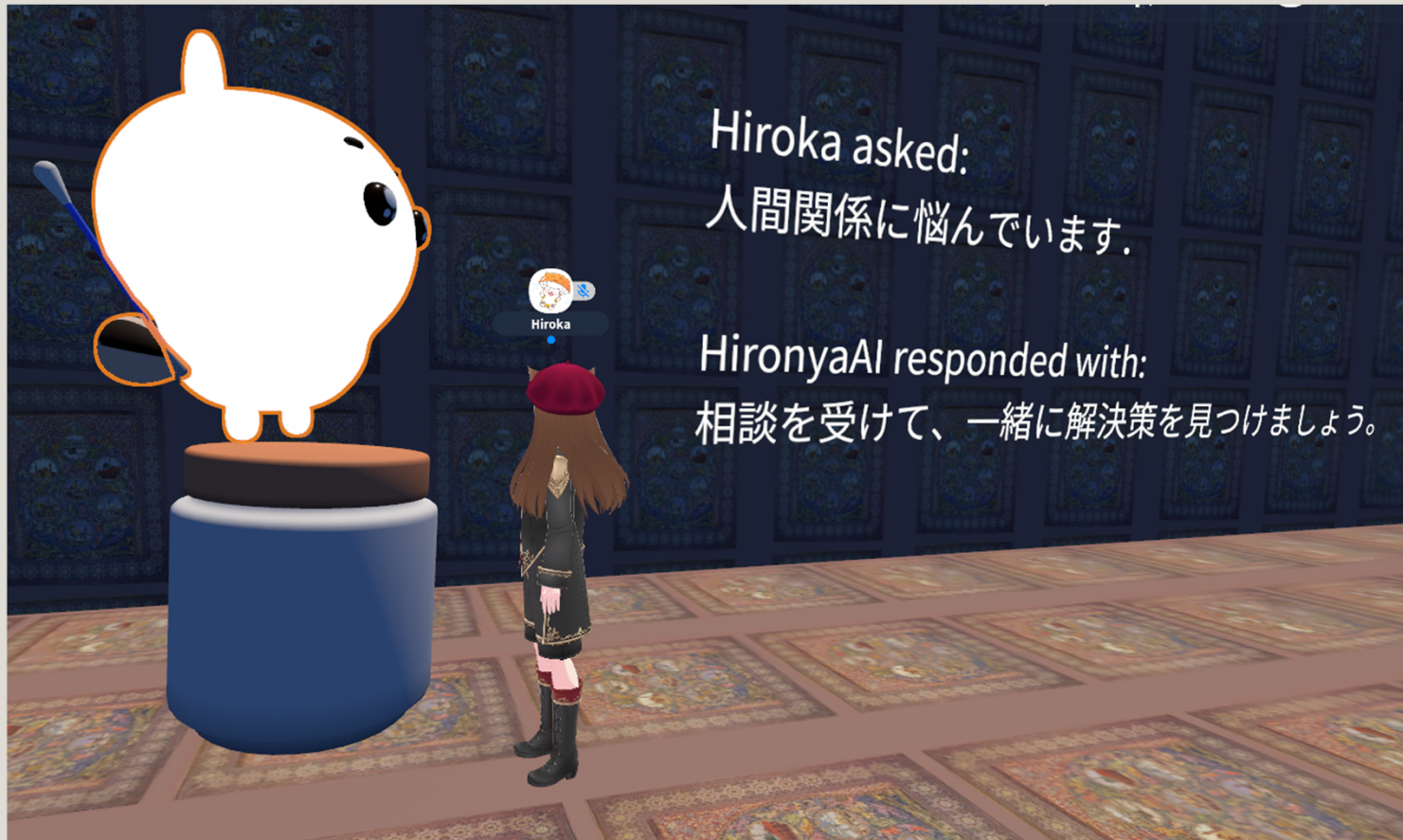
HIRONYA AI SYSTEM ARCHITECTURE

- Fig. illustrates the sequence of interactions between the user and the Hironya AI character within the Metaverse environment

- Real-time response via GPT-4o

- Uses Google Apps Script + JSON
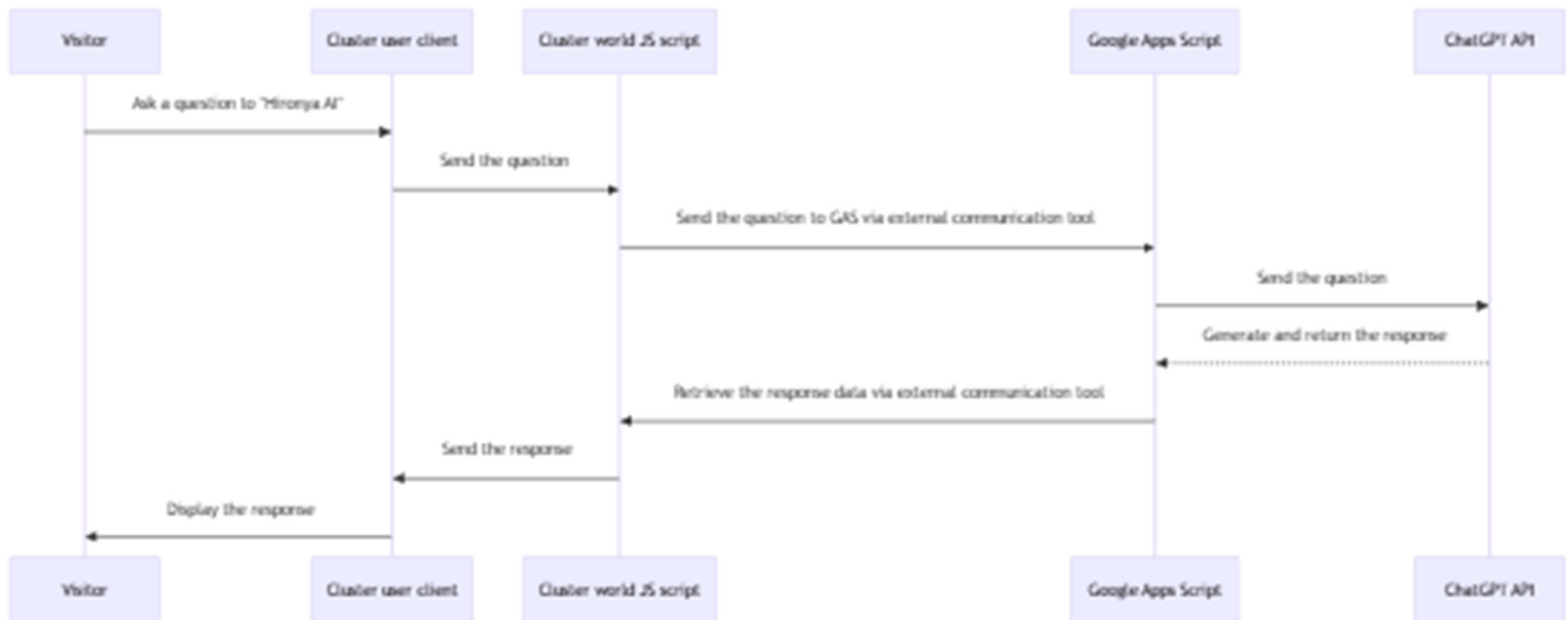
METHODOLOGY

- Nov 2024–Jan 2025

- 316 lines recorded

- Analyzed using MAXQDA

WORD CLOUD OF CONVERSATIONS WITH HIRONYA AI

- Frequent terms: like, want, school

- Emotional & educational themes

CLASSIFICATION OF CONVERSATIONAL CONTENT

Next, the coded lines from the text analysis results are presented (Fig. 8.)

- Social and interpersonal issues — 15% (22)
- Economy-related — 4% (5)
- Casual conversations and entertainment — 44% (63)
- Daily life and health inquiries, — 13% (19)
- Academic and work-related concerns — 23% (33)
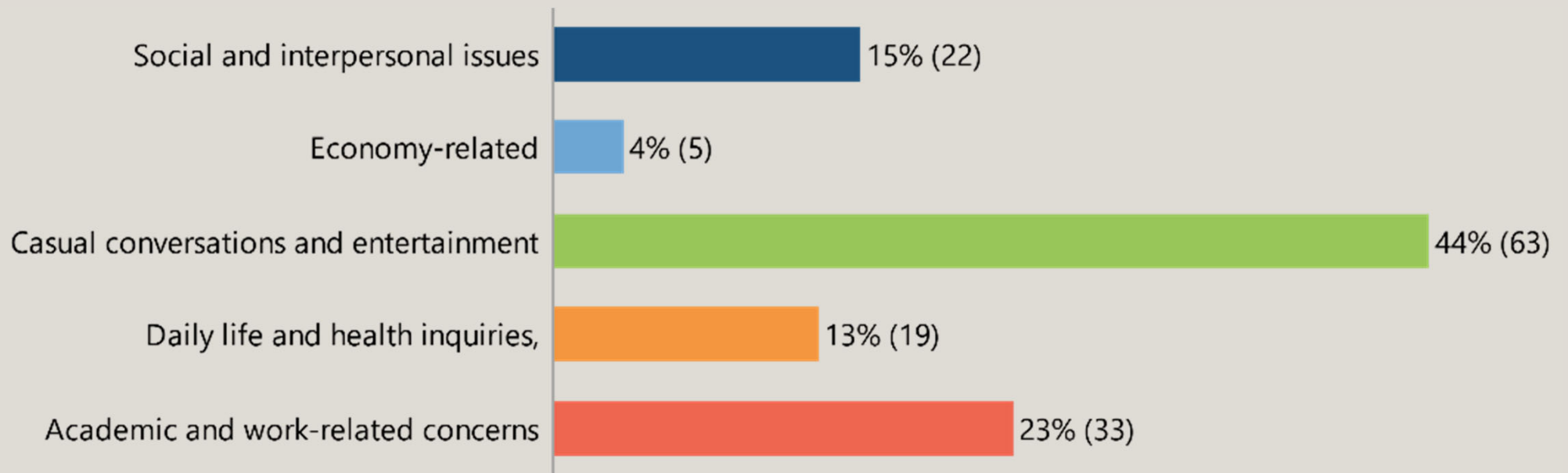
CONVERSATION CLASSIFICATION

(1) Academic and school--related concerns

- Entries included requests for guidance on psychological statistics, concerns about graduating from a psychology department, and struggles with attending school.

- Alternatively, entries featured questions from teachers, such as "Do you have any ideas for improving students' competencies in science classes?" and "Can you propose a project where students use AI to predict experimental results?"
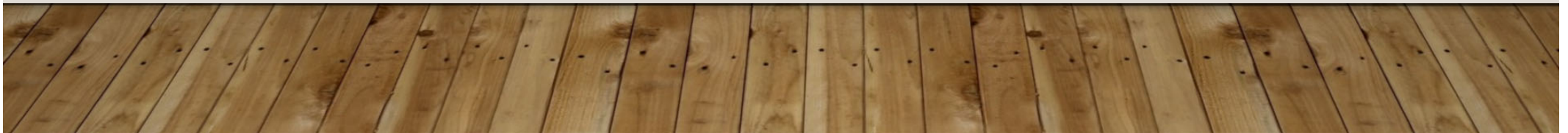
CONVERSATION CLASSIFICATION

(2) Daily life and health inquiries related

- entries covered a wide range of topics, including stomach pain, catching a cold, and shoulder stiffness.

(3) Social and interpersonal issues related

- entries included consultations about boyfriends and relationships.

Alternatively, statements such as "I had a tough day at work and feel exhausted" were categorized.

CONVERSATION CLASSIFICATION

(4) Economy-related

- entries consisted of concerns about financial difficulties, such as not having enough money.

(5) Casual conversations and entertainment

- category included requests for jokes ("Say something funny"), career advice ("What kind of job should I pursue in the future?"), and other open-ended inquiries.

CLASSIFICATION OF CONVERSATIONAL CONTENT

As shown in **Fig.8.**, conversations classified under 'Casual Conversations and Entertainment' were the most frequent($x^2(4) = 66.732$, p<.01, N=142, Ex=28.4). I also used MAXQDA for this classification.

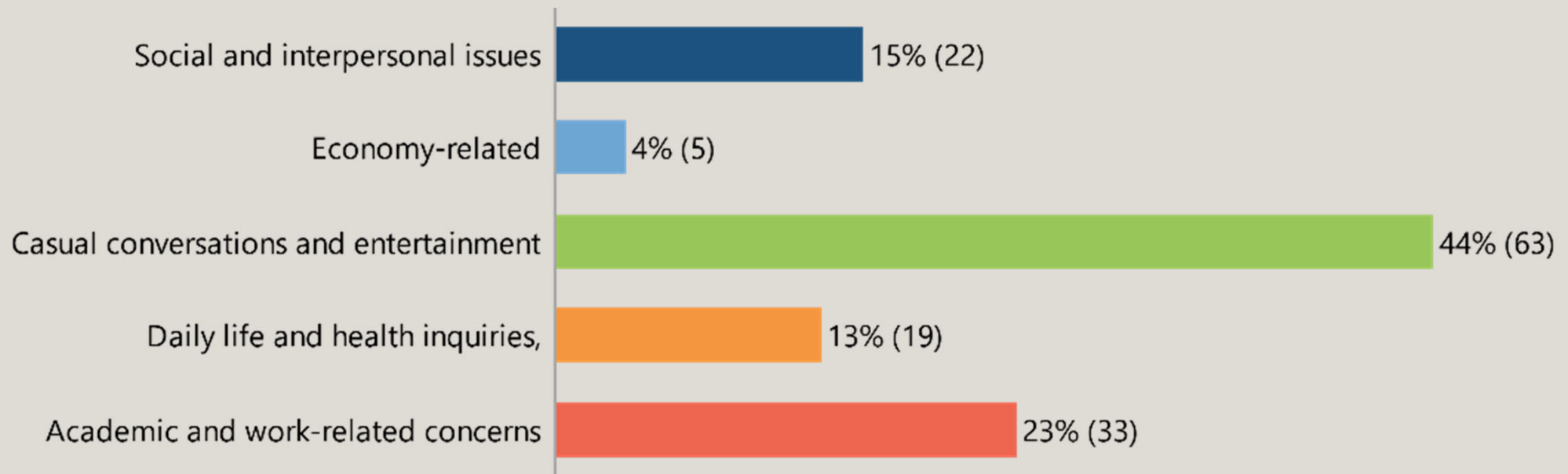| Category	Value
Social and interpersonal issues	15% (22)
Economy-related	4% (5)
Casual conversations and entertainment	44% (63)
Daily life and health inquiries,	13% (19)
Academic and work-related concerns	23% (33)

TABLE 4. TABLE OF THE NEGATIVITY-POSITIVITY ANALYSIS BY MAXQDA

Furthermore, the emotion analysis of the consultations revealed that joy, affection, and anger were relatively low, whereas fear and sorrow were high (Table 4.).

Category	Positive	Slightly Positive	Neutral	Slightly Negative	Negative	Brief Summary
Social and interpersonal issues	4.50%	27.30%	31.80%	13.60%	9.10%	Mixed tones, mostly neutral or slightly positive
Economy-related	0%	0%	10.00%	30.00%	60.00%	Strongly negative sentiments dominate
Casual conversations and entertainment	28.60%	23.80%	19.00%	9.50%	4.80%	Generally positive and uplifting
Daily life and health inquiries	5.30%	10.50%	10.50%	36.80%	31.60%	Mostly negative, reflecting common health concerns
Academic and work-related concerns	43.50%	13.00%	13.00%	21.70%	8.70%	Positive overall, but with some stress noted
School (subcat.)	14.30%	28.60%	14.30%	28.60%	14.30%	Balanced sentiment, varied experience
Student (subcat.)	33.30%	33.30%	0.00%	0%	33%	Predominantly positive or neutral

TABLE 4. TABLE OF THE NEGATIVITY-POSITIVITY ANALYSIS BY MAXQDA

These observations suggest that sentiment trends differ significantly by category, with casual conversations being predominantly positive, while economy-related and daily life inquiries exhibit more negative tones.

Category	Positive	Slightly Positive	Neutral	Slightly Negative	Negative	Brief Summary
Social and interpersonal issues	4.50%	27.30%	31.80%	13.60%	9.10%	Mixed tones, mostly neutral or slightly positive
Economy-related	0%	0%	10.00%	30.00%	60.00%	Strongly negative sentiments dominate
Casual conversations and entertainment	28.60%	23.80%	19.00%	9.50%	4.80%	Generally positive and uplifting
Daily life and health inquiries	5.30%	10.50%	10.50%	36.80%	31.60%	Mostly negative, reflecting common health concerns
Academic and work-related concerns	43.50%	13.00%	13.00%	21.70%	8.70%	Positive overall, but with some stress noted
School (subcat.)	14.30%	28.60%	14.30%	28.60%	14.30%	Balanced sentiment, varied experience
Student (subcat.)	33.30%	33.30%	0.00%	0%	33%	Predominantly positive or neutral

FIG. 9. THE EMOTION ANALYSIS OF THE CONSULTATIONS BY LOCAL TEXT MINING TOOL
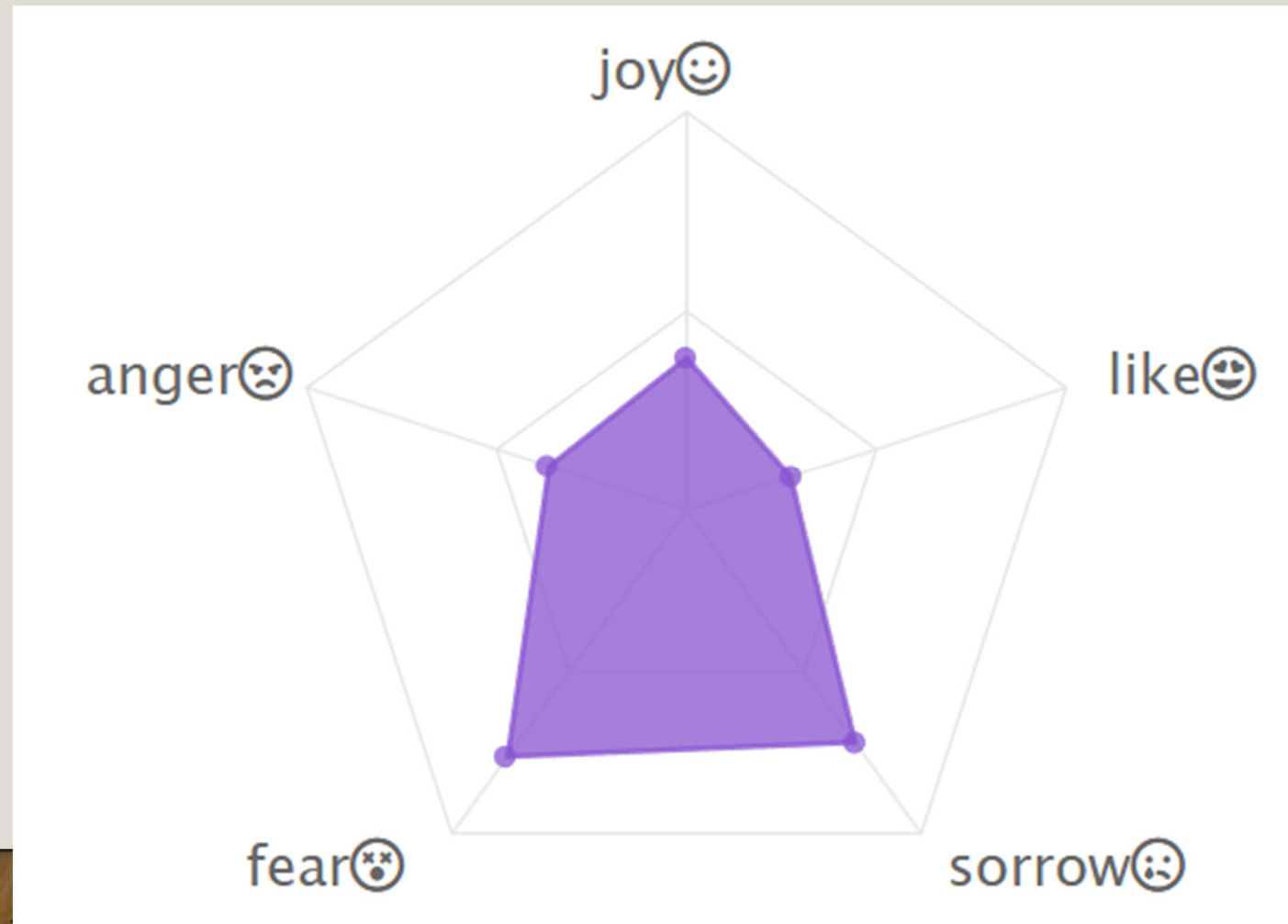
TABLE 5. TABLE OF THE NEGATIVITY-POSITIVITY ANALYSIS BY LOCAL TEXT MINING TOOL

Noun - adjective	Negative/positive	Score	Frequency of occurrence
stomach-it hurts	Negative	2	2
work-tough	Negative	2	2
School-bothersome	neutral	1	1
World-I want	Negative	0.67	1
Kiri-good	neutral	0.5	1
Expert-good	positive	0.4	1
Atopic dermatitis-good	Negative	0.25	1
cluster-good	Negative	0.25	1
content-good	Negative	0.25	1
world-good	Negative	0.25	1
work-good	Negative	0.25	1

CONCLUSION

- AI counselor supports students

- Dialogues show emotional needs

- Avatars reduce communication anxiety

FUTURE WORK

- Better emotion analysis

- Promote positive dialogues

- Topic-specific responses

- Ethical considerations

ACKNOWLEDGMENTS AND REFERENCES

- Funded by Open University of Japan

- Tools: ChatGPTApp, MAXQDA

- Demo: https://youtu.be/LxrmXsJh3Zo

AI COUNSELOR (HIRONYA AI) ROOM

Thank you very much for attending my presentation today.

You can access the AI counselor (Hironya AI) Room via the link below.

https://cluster.mu/w/c6b84ce3-6988-4394-a330-aad710c4c2cb/entry

The website is in Japanese, but you can use your browser's automatic translation feature to view it in any language you prefer.

The AI counselor is available for use in various languages, so please feel free to try it out in the language of your choice.

I would greatly appreciate it if you could share your impressions or feedback by email.

THANK YOU / Q&A
YOUR THOUGHTS ARE WELCOME!

- Thank you for viewing this presentation.

- As this session is held late at night in Japan time,

- I welcome your feedback or questions via email.

- I would greatly appreciate your thoughts and comments to improve future developments

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