

INTER TWINED

Exploring ways to strengthen our humanness
in the age of artificial intelligence

Hanne Lockertsen

CANDIDATE

Hanne Lockertsen

INSTITUTION

The Oslo School of Architecture and Design

SUPERVISOR

Mosse Sjaastad

FIELD

Interaction design

DATE

Spring 2024



Content

00

PREFACE 6

Abstract	8
A tiny AI dictionary	10
Declaring previous AI project	12

01

INTRODUCTION 14

Project scope	16
Methods and approaches	18
Why this project?	20
To whom am I writing?	22
Design's role in this project	24
Project values	26
Project goal	28

02

METHODS & APPROACH 30

Scoping an explorative project	32
Talks with interesting people	38
Generative AI as a method	40

03

UNDERSTANDING 44

What is human?	46
What is artificial intelligence?	50
AI as a material	54
Emotional AI	56
AI in gaming	62
Customizing AI	64
AI in education	66
Can AI take a coaching role?	70

04

EXPLORATION 72

Scoping the exploration	74
Mini workshop with students	76
The UI delivery	78
The concept in five steps	81
1 Setup & tuning	82
2 Setting a goal	88
3 Plans & tasks	94
4 Daily support	102
5 Insight & reflection	112
Expert feedback	118

05

BACK MATTER 120

Reflections	122
A heartfelt thank you to	124
References & resources	126



PREFACE

Read this before you read on

Abstract

This project explores the implementation of artificial intelligence (AI) and education, focusing on how AI can enhance the educational experience and support students' well-being. Using an interaction design approach, the project investigates AI's potential to provide personalized learning paths, manage time and tasks, and offer emotional and cognitive support. Through a possibility-driven exploration, the project highlights the potential value AI can bring to students, emphasizing the human aspects of technology and its impact on personal and academic growth. Insights from experts, student feedback, and practical applications are synthesized to present conceptual user interface components that illustrate AI's role in education. The project's findings suggest that while AI presents endless possibilities, careful consideration is needed to balance its benefits with ethical and practical challenges.

A tiny AI dictionary

This report introduces several terms that may not be familiar to all readers. The following is a collection of some concepts about AI that are mentioned throughout this project.

Artificial intelligence (AI) is the ability of machines to perform tasks that typically require human intelligence.

Artificial general intelligence (AGI) is a type of AI, capable of performing a wide range of cognitive tasks at or above human levels, although it does not exist yet.

Machine learning (ML) is a type of artificial intelligence that enables algorithms to recognize data patterns and make predictions or decisions autonomously.

Large language models (LLMs) are types of artificial intelligence that processes and generates human-like text by learning from vast datasets of existing text

Generative AI is a branch of machine learning technology that creates new content based on the examples it was trained on.

Computer vision enables machines to interpret and understand visual information from the world around them.

Natural language processing (NLP) involves teaching machines to understand and generate human language.

Bias in AI refers to unfairness or errors in the data or algorithms of artificial intelligence systems, which can lead to skewed results or unfair outcomes.

Emotional AI involves artificial intelligence systems designed to recognize, interpret, simulate, and respond to human emotions, thereby enhancing interactions between machines and humans.

AI augmentation enhances human capabilities by using AI to complement and amplify human skills and decision-making processes.

Examples include the writing support in Grammarly and traffic updates from Google Maps.

AI automation involves using AI to perform tasks and processes autonomously, thereby reducing the need for human intervention.

Examples are full self-driving cars from Tesla and customer support chatbots on your bank's website.

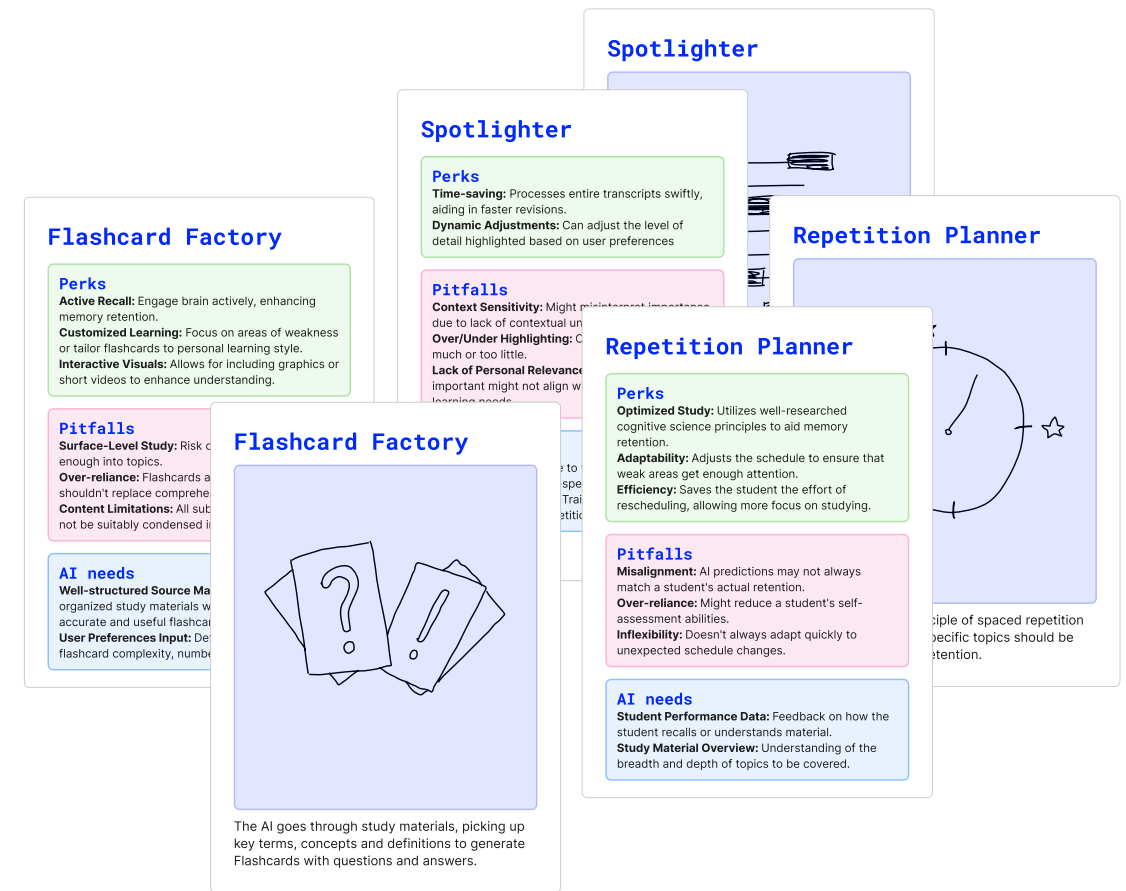
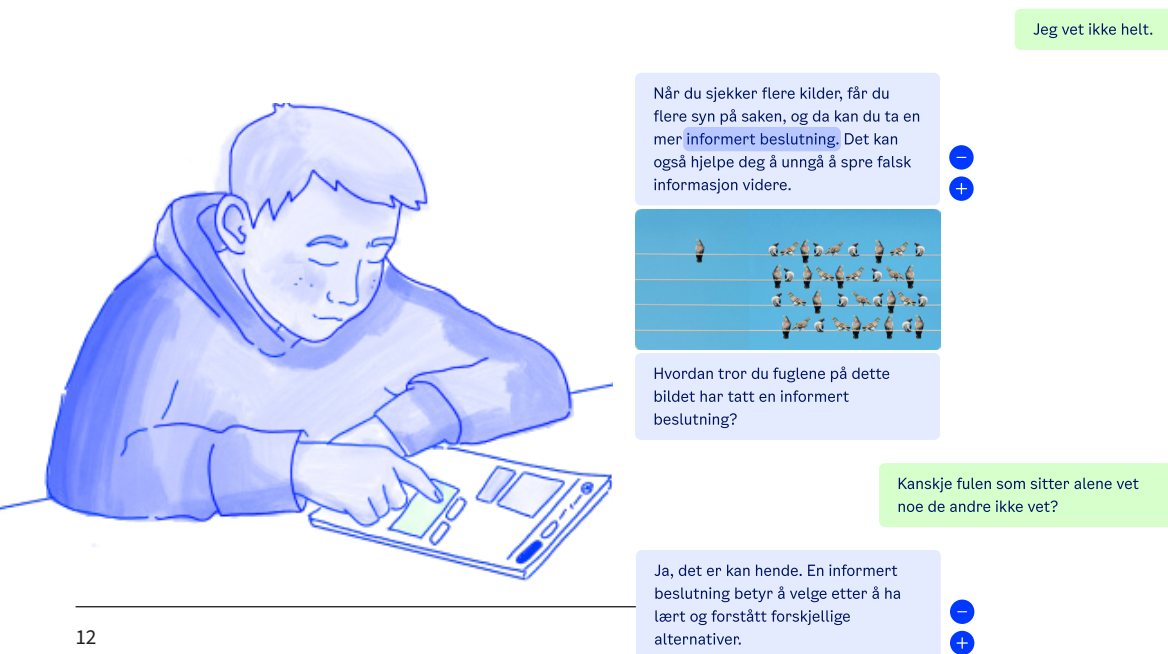
Declaring previous AI project

I have previously worked on two projects within my master's courses that focused on AI in education, contributing to the knowledge base of this diploma project.

ASK: A CHATBOT FOR 7TH GRADE PUPILS

Working with Aschehoug as the industry partner, Ulrik Karlstrøm and I developed a linguistic framework for their chatbot, designed to interact with 7th graders in social science. The structure of the chat bubble included affirming the student's correct answers, posing questions to maintain engagement, and providing detailed information as they progressed. It was a fascinating experience to design the conversational aspects of how the chatbot communicates.

The project was from the Screens master's course, spring 2023



The project was from the Editorial master's course, spring 2023

AI CARDS FOR ACADEMIC SUPPORT

With an open brief centered around the theme of 'learning,' I aimed to investigate how AI could assist overwhelmed and stressed-out university students. This exploration of AI's potential as a supportive tool resulted in the creation of 12 unique cards. Each card showcases an AI feature, describing its function, potential benefits, and challenges or pitfalls to consider. Additionally, each card outlines the necessary conditions for the AI feature to function effectively.

01

INTRODUCTION

This chapter gives an overview, explains how I worked, and why the project exists.

Project scope

Intertwined is an interaction design project that sets out to explore how AI can support university student in learning environments.

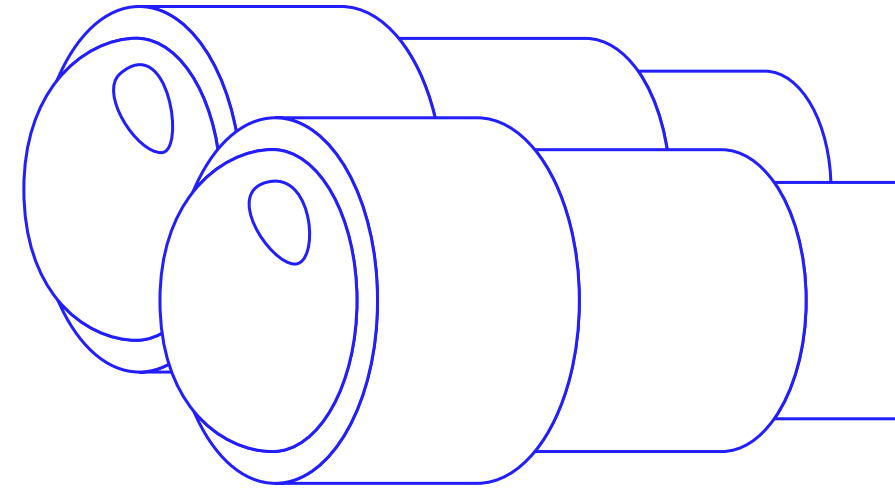
THE SCOPE OF THIS PROJECT

This diploma project uses methods from interaction design to explore, discuss, and exemplify how AI can be experienced in the context of education and learning. The primary users are university students, presenting various challenging situations where AI could offer significant improvements. Focusing on students in universities enables me to explore the possibilities for AI technology within a defined space of education.

THIS PROJECT AIMS TO DELIVER

Conceptual UI components: Explorations of how the value of artificial intelligence can be utilized in educational contexts through a collection of high-fidelity wireframe UI components conceptualizing the potential values of AI.

Basis for discussion: Narratives communicated through UI components exploring how certain AI features might evolve in the future to spark discussion.



Intertwined is a project utilizing **design for dialogue.**

THIS PROJECT DOES NOT AIM TO DELIVER

A cohesive digital platform: This is not one unified digital platform for educational AI applications.

Technicalities: The project focuses on design rather than any purely technical aspect of AI systems.

Ethical framework: There are no guidelines for legal or ethical processes for AI implementation, however, reflectins about the .

Methods and approaches

This project is built on discussions with experts, extensive desk research, and the use of generative AI tools.

TALKS WITH EXPERTS AND INTERESTING PEOPLE

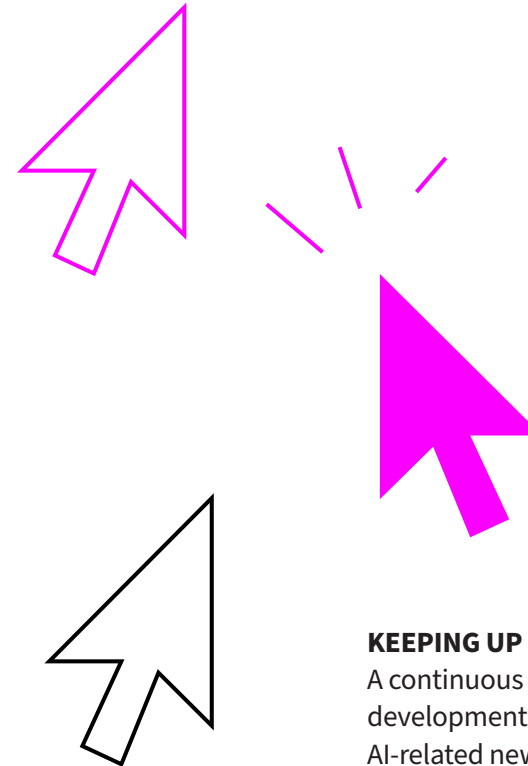
Initial discussions with experts in education, technology, psychology, and neuroscience were enlightening and provided starting points for deeper exploration.

DESK RESEARCH

Reading articles and blog posts, along with watching numerous videos on topics such as artificial intelligence and its implications, education and learning theory, productivity tools, and human nature.

TALK WITH STUDENTS

After having gained some understanding of the possibility space, I reached out to students to hear their thoughts on the project direction.



KEEPING UP TO DATE ON AI

A continuous effort was made to stay informed about the developments in the AI field. This was achieved by reading AI-related news, talking with peers, and regularly watching YouTube videos on the subject.

GENERATIVE AI AS A METHOD

Throughout the project, I utilized LLM tools, primarily ChatGPT, for various purposes including but not limited to information gathering, discussions, brainstorming, as a writing aid, content creation, ideation, concept development, critical reflection, and design feedback.

These methods resulted in a bricolage of information, where each piece contributed to a comprehensive understanding of AI's potential and challenges.

Why this project?

My motivation comes from my personal fascination with AI technology and a recognition for the important role design has in shaping this transformation.

REIMAGINING EDUCATION

The AI revolution raises profound questions about the future of education and the very purpose of learning. In a future where AI might surpass all human capabilities, critical questions arise: What is left for humans to learn when machines can solve every problem? Do we need to learn at all? If AI can outthink us, are human thoughts obsolete?

A COLLECTIVE RESPONSIBILITY

I encourage everyone to reflect on their personal relationship with AI, and in turn, lift the view to consider our collective relationship with this technology. The concept of artificial intelligence represents the most significant advancement in human history, can be daunting. Yet, this also means we carry a collective responsibility to actively create the future we envision for ourselves.

PERSONAL MOTIVATION

I am personally excited about technological development and the transformation as humans and technology become more intertwined. As a designer, I recognize my responsibility to adopt both an optimistic and critical approach as we are all witnesses and part-takers in this significant technological leap.

To whom am I writing?

As I complete this diploma project exploring the profound implications of artificial intelligence in education, I hope it will be of interest to a diverse group of people.

STUDENTS

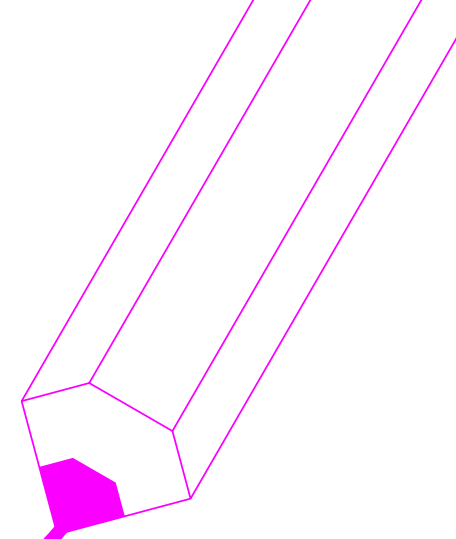
For those curious about AI's role in education and its broader social impact, this project aims to prompt reflection on their own relationship with AI and possibly inspire further academic exploration of the topic

EDUCATORS

For educators seeking insights into possible applications of AI in learning environments, to widen their understanding of this technology's potential.

DESIGNERS & DEVELOPERS

For designers and developers working with AI applications, this project may offer valuable perspectives on both the opportunities and challenges that AI technology presents.



PHILOSOPHERS AND THINKERS

Anyone engaged in considering the deeper philosophical issues surrounding humanity and technology might find the discourse and reflections in this project thought-provoking.

FOR ANYONE ELSE

If you're curious about how AI can shape our tools, our society, and our philosophies, this project could provide some food for thought.

Design's role in this project

My role as a designer in this project has been to explore the potential applications of AI through an optimistic and critical lense.

POSSIBILITY DRIVEN EXPLORATION

In this project, I outline how interaction design can play a central role in both exploration and understanding of the potential of how AI technology can strengthen our humanness. This means, exploring the possibility space while advocating for a user experience that is both comfortable and empowering.

HUMAN-CENTRIC

The initial inspiration for this project came from realizing some of the possibilities of AI technology. However, in my role as an interaction designer, my primary focus has been on the human aspects of the technology — specifically, how students would interact with and experience AI.

SPECULATIVE

I used tools and methods from interaction design to explore potential scenarios through exemplified interface components. Set in different contexts, these components help narrate speculative stories about how AI might be used to support students' academic and personal growth in the future.

MY STANCE ON AI

The future of humanity in the face of rapid technological advancements provokes a range of opinions. Some fear that AI is 'taking over the world' and replacing all our jobs, as though the technology has its own intentions. However, it's important to remember that humans are the creators and developers of this technology. I choose to believe that humanity inherently seeks to foster good, translating to AI development to be mainly good — though not without potential conflicts and errors. With this in mind, I maintain a cautiously optimistic perspective, believing that AI will ultimately enhance our lives and elevate societal standards.

Project values

Early in the project, a set of aspiring values within *humanness*, *education*, *technology*, and *well-being* was established to serve as the philosophical foundation and aim of this project.

HUMANNESS

Curiosity

The desire to discover and learn

Critical Thinking

The ability to reason and make informed decisions

Autonomy

The right and need to practice self-determination and agency

Empathy

The need and desire to understand others and share our feelings

EDUCATION/LEARNING

Explorative

Supporting an investigative approach to learning

Challenging Enough

Presenting a level of difficulty that stimulates growth

Engaging

Aiming to capture the student's fascination and attention

Adaptive

Facilitating flexibility and responsiveness to changing needs.

TECHNOLOGY

Empowering

Enabling students to improve their inherent capabilities

Transparent

Committing to openness in processes and intentions

Balanced

Seeking an integration in line with human needs

Nourishing

Aiming for technology to have a net positive effect

WELL-BEING

Study-Life Balance

Adesirable relationship between academic and personal life

A Sense of Purpose

Meaningful activities that align with personal and professional goals

Personal Growth

Focusing on continuous self-improvement

Self Regulation

Encouraging behavior that promotes self-care

HOW I USED THE VALUES

I selected the values based on my belief that they would enhance human agency. These values served three key functions in the project:

- 1. Directional Aim:** They set a clear path for the desired direction of the project.
- 2. Navigational Guide:** They aid in steering the exploratory process.
- 3. Evaluation Standard:** They provide a standard for decision-making and evaluating concepts.

Project goal

This project delves into the complex role of AI in education, aiming to deepen understanding, spark dialogue, and empower students.

UNDERSTAND AI

The main goal of this project has been to gain a deeper understanding of the broad area of application and implications of AI. This exploration aims to shed some light on how AI can enhance educational settings and raise some awareness about the potential challenges that may arise with its use.

DIALOGUE CONTRIBUTION

Additionally, this project seeks to contribute to the exponentially important dialogue about AI, with the aim of emphasizing core values like transparency, trust, and empathy that should guide our design and evaluation processes.

EMPOWERING STUDENT

The context I have set as a basis for explorations has been university students, with the goal of students feeling more in charge of their academic development, so that when going into exams they will have a deeper understanding of their level and realistic expectations of the result. The hypothesis is that if studying is being more predictable and comfortable, this will lead to students experience growth on both an academic and a personal level.

02

METHODS & APPROACH

This chapter explains how I worked with methods and approaches to scope, understand and make choices.

Scoping an explorative project

When AI can do anything and everything, some choices have to be made about where the outer limits of the explorations go.

POSSIBILITY DRIVEN PROJECT

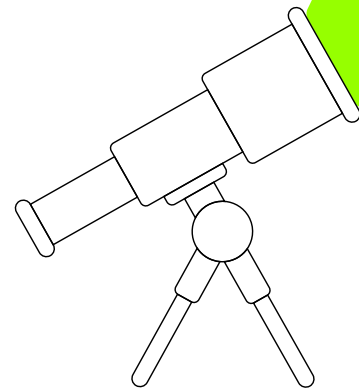
While there are problems to be solved in the educational sector, this project does not aim to identify or propose solutions for these issues. Instead, it explores the potential value of emerging AI technology for students. Using the educational setting as a playground for exploration, I have been searching for where this potential value exists.

LOOKING FOR THE UNKNOWN

Navigating this explorative project has been like moving around in unfamiliar terrain; not knowing what you are looking for but hoping to recognize it when you see it. Discovering opportunities rather than looking for problems and solutions has been a unique challenge.

AI = ENDLESS POSSIBILITIES

Given that AI is applicable to any domain, determining relevant information for this project has been challenging. My curiosity led me to explore AI's potential value in human psychology, educational practices, and well-being.



This possibility driven project started out with a wide scope, and through locating interesting finds along the way, it gradually moved in more intentional directions, before exemplifying values through conceptual UI components.

FOCUSING IN ON THE STUDENT

Viewing education through the lens of AI possibilities, the project could move in many directions. AI's ability to personalize content drew my focus to the individual student experience. In a previous project, I explored the concept of 'skippertaket' — where students cram before exams due to feeling behind. Having been a student for nine years, I relate closely to this method and see AI's potential for offering more effective alternatives.

Through **live scoping**, the project has moved from open-ended to gradually more defined.

EDUCATIONAL WELL-BEING

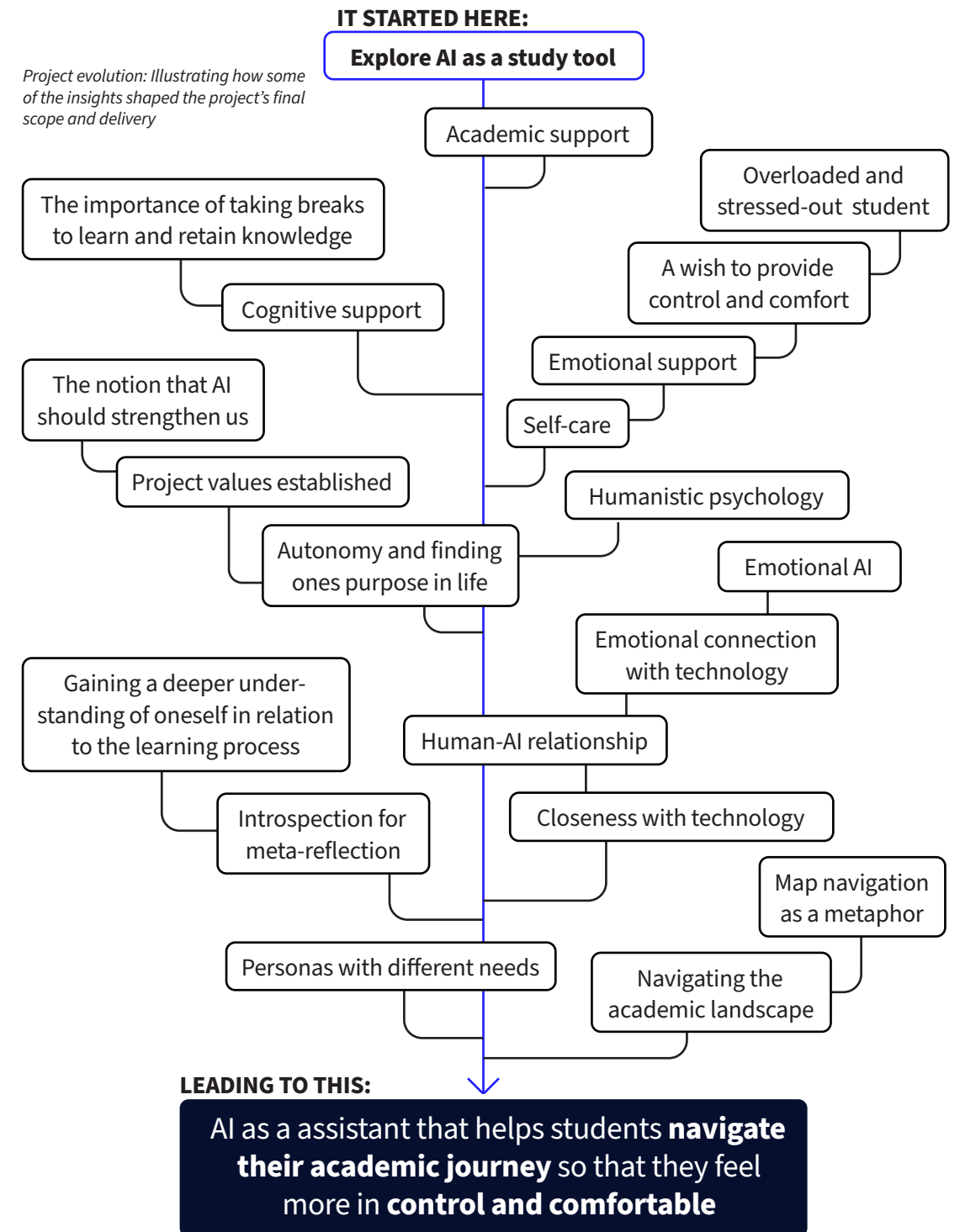
The pressure and stress of being a student can compromise academic performance. The first year at university is particularly challenging as young people find their place physically, academically, and personally. This led me to explore how AI can support students' well-being in the context of learning.

PERSONAL AND ACADEMIC GROWTH

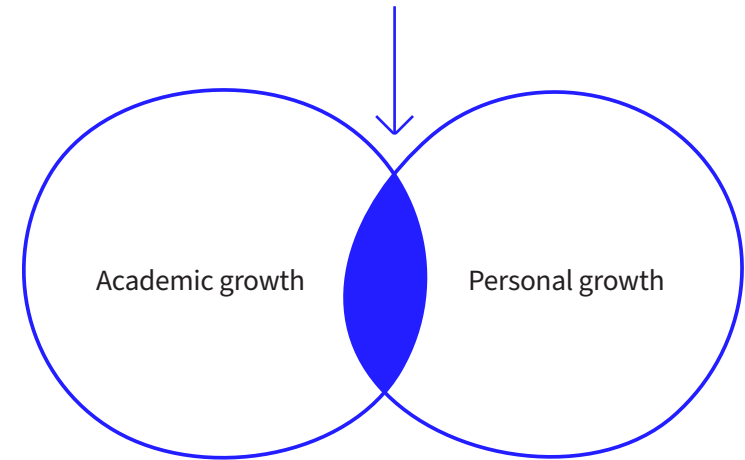
The versatile nature of LLMs allows AI to guide students through their educational journey, helping them manage academic objectives while providing self-care and well-being support. This project explores the overlapping areas of academic and personal growth.

MAKING CHOICES

Various discoveries influenced my decisions throughout the project, leading to the final delivery of this diploma. Sometimes, it was a simple quote, a philosophical perspective, an interaction, or inspiration from an existing product that guided me to the final scope.



WHERE THE PROJECT EXISTS



Talks with interesting people

To gain understanding, I have talked with relevant and interesting people about AI, psychology, neurology, education, and general reflections on how this emerging technology.

CATERINA FORNO RÍOS

We talked about how to conduct possibility-driven design projects, and the importance of having some clear evaluation criteria when the scope is broad. Looking back, the project values have worked well for this.

UX concept developer at ReMarkable

MATT WEBB

He encouraged me to make something weird and speculate about what the future of AI in education could look like.

Designer and technologist, founder of Acts not Facts

KOEN GERARD ALOIS VERVAEKE

Koen enlightened me about multi-sensory experiences, spatial memory, active learning states and the default mode network. We reflected on the 'trend' of overstimulating our brains, and the importance of breaks in a learning context.

Associate professor in medicine, neuroscience at the University of Oslo. Head of the Lab for Neural Computation.

DAGFINN BERGSAGER

Talking about the process of developing GTP-UiO and how educators frequently request specific AI tools to use with their students.

Deputy Director at the University of Oslo, IT-department

Teacher and PhD student in educational science at the University of Gothenburg

ERIK WINERÖ

We had an inspiring talk about the responsibility we have for designing AI that strengthens people, and the importance of having some basic knowledge to be able to detect flawed information.

Associate professor in psychology at The University of Oslo

CATO BJØRKLI

This conversation was highly educational as Bjørkli introduced me to humanistic psychology, mentioning Maslow's hierarchy of needs and how coping styles are essential for cognitive well-being.

Hans-Jakob: designer in Gyldendal Rettsdata, background in developing Helle: software developer in Gyldendal Rettsdata, MSc in Physics

HANS-JAKOB BRANDT & HELLE RØTTERUD GJERTSEN

The talk ranged from practical discussions about how AI will make law practice more accessible to everyone, to more dystopian ideas about AI generating the perfect content for us and the fear of making people less productive and numb.

Generative AI as a method

A natural part of the project has been reflecting on how I use AI as a tool when studying to enhance my understanding of my work and learning processes.

FROM GOOGLE TO CHATGPT

My go-to method for finding specific information used to be Google search, whether it was looking up historically important names in AI development or understanding the basic idea of humanistic psychology. After the public launch of ChatGPT, the trend has been to use AI more and more for those kinds of specific queries. The reason is simple and obvious once you experience the difference: it's much more convenient to read a tailored answer to a specific question than to evaluate which link to click and search for the answer amidst other information.

SPARRING PARTNER

Given that the first phase of the project involved researching various fields overlapping with AI, education, and well-being, I had many thoughts going in different directions about the project's trajectory. As I built the project's knowledge base, I simultaneously used ChatGPT as a notepad for jotting down my most recent observations, interests, and ideas. With the option to 'build' a specific GPT for the project by adding context and files, I kept the chat up-to-date on the latest progress.



IDEATION AND CRITIQUE


As ideas and concepts developed, I took screenshots of sketches from Figma and asked ChatGPT to reflect on them, checking if it understood the general idea and seeking critique or insights on potential challenges. The initial responses were generally overly enthusiastic, so I had to prompt it to be more critical for constructive feedback.

It feels like having a sparring partner **always available** whenever I have something on my mind.

During the writing of this report I would use two specific writing tools to support my writing process; Grammarly and ChatGPT. The free version of Grammarly is great as a clean writing tool that provides spellcheck and minor feedback on sentence structure. The sentence written down in Grammarly would be a somewhat rough idea of what i would want the paragraph to say, and i did not pay too much attention to the length of the sentence or using the same word several times, I knew both Grammarly and ChatGPT would help me with synonyms and making it both shorter and communicating the idea more clearly. Then the paragraph would go through the GPT i created specifically for report writing where i had uploaded some previous diploma projects for context and asked it to function as a writing tool. With the simple prompt: 'makes sense?' following the paragraph, I got a reply that sounded more like what I meant to write. Changing some of the typical AI-jargon (read: 'tapestry of life', 'embark on a journey' and 'delve into'), with my more basic vocabulary.






the same word several times, I knew both Grammarly and ChatGPT would help me with synonyms and making it both shorter and communicating the idea more clearly. Then the paragraph would go through the GPT i created specifically for report writing where i had uploaded some previous diploma projects for context and asked it to function as a writing tool. With the simple prompt: 'makes sense?' following the paragraph, I got a reply that sounded more like what I meant to write. Changing some of the typical AI-jargon (read: 'tapestry of life', 'embark on a journey' and 'delve into'), with my more basic vocabulary.

 make clear 

 Here's a clearer and more concise version of your text:

"During the writing of this report, I used two specific tools: Grammarly and ChatGPT. The free version of Grammarly was helpful for spellcheck and minor feedback on sentence structure. I would write rough drafts in Grammarly, focusing less on sentence length or repetition, knowing both tools could help refine the text.

After drafting in Grammarly, I would pass the paragraph through the GPT I created for report writing. I had uploaded previous diploma projects to provide context and asked it to function as a writing assistant. Using a simple prompt like 'Does this make sense?' I received replies that better communicated my ideas. I then adjusted any typical AI jargon ('tapestry of life,' 'embark on a journey,' 'delve into') to fit my more straightforward vocabulary."

AI AS A WRITING TOOL

During the writing of this report, I used two specific tools: Grammarly and ChatGPT. I would write rough drafts in Grammarly, focusing less on sentence length or repetition, knowing both tools could help refine the text.

I would pass the draft through the GPT I created for report writing, where I had uploaded previous diploma projects for context and instructed it to function as a writing tool. Using simple prompts like 'makes sense?' or 'make clear', I received replies that communicated my ideas more clearly. After rephrasing, replacing typical AI jargon with my more straightforward vocabulary, and one last time through Grammarly for spellcheck, it ended up here.

03

UNDERSTANDING

This chapter is about looking at humanity and AI from different angles to gain a broad understanding of its potential.

What is human?

The project values regarding humanness are curiosity, critical thinking, autonomy, and empathy. This section elaborates on these and what they mean in the light of AI development.

THE HUMAN ESSENCE

The ancient Greek philosopher Aristotle argues it is our ability to reason and think logically that sets humans apart from other animals. Abraham Maslow, an American psychologist best known for creating Maslow's hierarchy of needs, considered creativity to be a characteristic of self-actualizing individuals.

However, today we see machines generate art, music, and literature, and perform reasoning actions to some extent. This raises important questions about the unique characteristics of humanity as machines move closer to what was once considered unique human features.



ACTUALIZING THE SELF

Maslow's hierarchy of needs identifies a practice of self-actualization to achieve one's fullest potential which aligns with the value of autonomy — feeling in control of one's life; that we feel in control of our life. AI can support students in this objective by offering feedback and opportunities for self-reflection.

HUMANISTIC PSYCHOLOGY

In a video chat, Cato Bjørkli, an associate professor in Psychology at the University of Oslo, explained how humanistic psychology introduces a philosophy where individual well-being and personal growth are prioritized. It emphasizes understanding people through their unique perspectives, promoting self-actualization, and highlighting the importance of free will and personal responsibility in achieving psychological health.

Therapists provide empathy and unconditional positive regard to create an environment that promotes self-exploration and personal growth. This setting allows patients to explore and express themselves authentically. This approach is interesting in how the human-AI relationship can be designed to form a non-judgmental environment for students to engage and grow.

AI IN SELF-REGULATION

We all have unique ways of experiencing and dealing with stress, and Bjørkli points out that coping styles are essential for self-regulation. He believes it's unrealistic to expect technology to fully understand and enhance our perceptions and experiences, given the complexity of life is too nuanced for technology to grasp.



When we talk about **cognitive support**, that is on one hand, to provide help with the actual task, but more importantly is to provide the **feeling of coping**.

*Cato Bjørkli, associate professor in
Psychology at the University of Oslo*

CAN AI UNDERSTAND US?

Bjørkli draws a parallel to the 2002 Hollywood movie *Minority Report* where it seems like the system knows exactly what Tom Cruise wants, creating a one-to-one relationship between his intentions and the functionalities the system offers. Modern AI promises to perceive our deepest needs and respond with nuanced precision. This assumes that AI can read and understand our emotions with a clarity that we ourselves might not even comprehend.

What is artificial intelligence?

Artificial intelligence (AI) is the ability of machines to perform tasks that typically require human intelligence. But what does that really mean?

AN AI ODYSSEY

The interconnection between humans and technology began in 1966 when MIT professor Joseph Weizenbaum created Eliza, the first chatbot. Designed as a digital psychotherapist, Eliza mostly repeated users' phrases back to them to simulate a therapeutic conversation.

(Tarnoff, 2023)

Since then there have been significant advancements in this field, leading up to the OpenAI's launch of ChatGPT in late November 2022, marking a significant milestone in democratizing artificial intelligence. It quickly became a cultural phenomenon, and by January 2023, 100 million people had interacted with ChatGPT, making it the fastest-growing application at that time (beaten by Threads in July 2023).

(Porter, 2023)

The last year we have seen new AI software, apps, plugins, and features popping up weekly, if not daily. The development is exponentially fast, leading to a wide range of opinions about AI and the future of humanity — from those who believe AI is the best development ever to those who view it as 'being our downfall'.

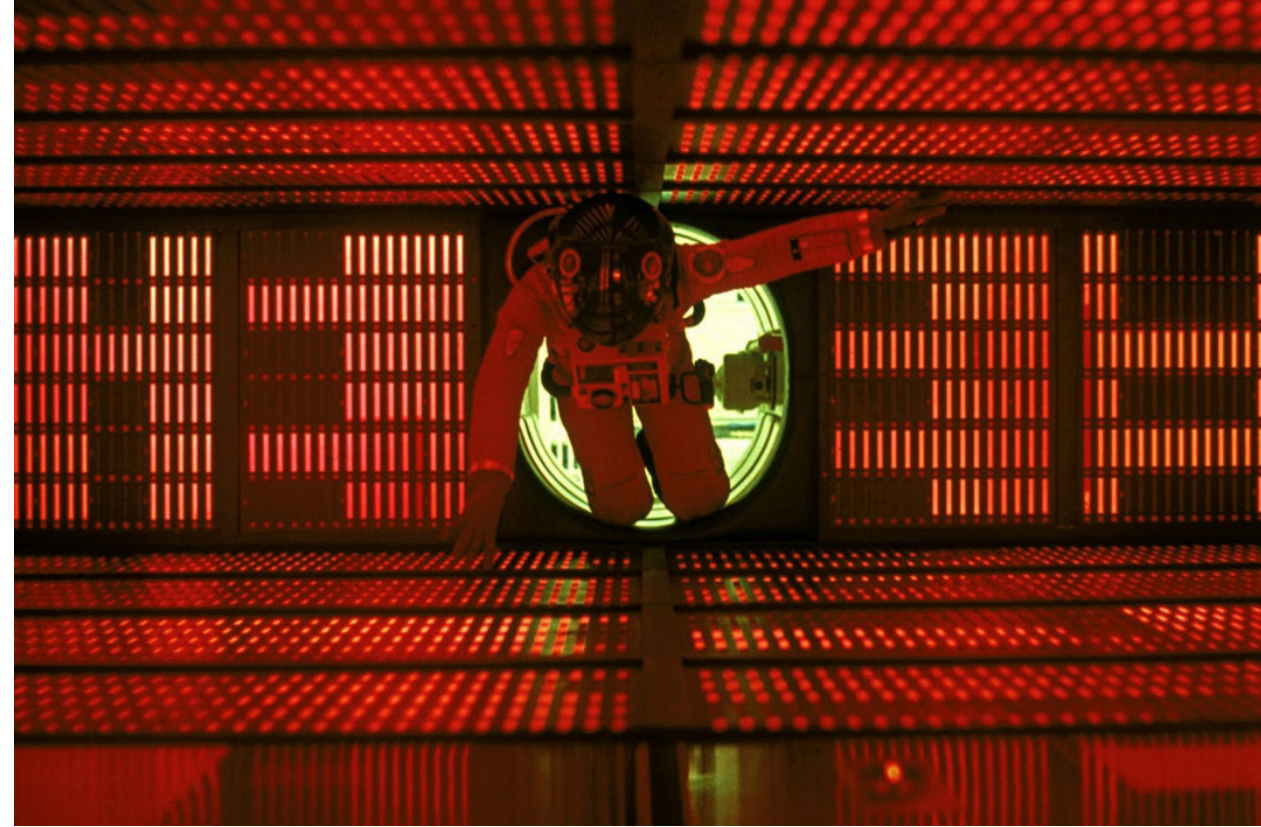
(From Fear to Utopia: A Vision of AI's Positive Potential, 2024)



The journeys of humanity and technology are now **deeply intertwined.**

*Mustafa Suleyman, CEO of Microsoft AI
From a TED Talk, April 22, 2024*

2001: A Space Odyssey (1968) directed by Stanley Kubrick. The astronaut David Bowman making his way to shut down the AGI HAL 3000.



SKEPTICISM AND APOCALYPSE

The notion of mingling with ‘digital beings’ might seem alien or frightening to many, given the pop culture narrative of AI influence and dominance in ‘2001: A Space Odyssey,’ ‘Ex Machina,’ and ‘Westworld, which further feeds our deep-seated fears of a technological apocalypse.

Yann LeCun, a leading figure in artificial intelligence and deep learning, and currently serving as the Chief AI Scientist at Meta, notes that the development of Artificial General Intelligence (AGI) will not be a sudden event but rather unfold gradually. He states: “It’s not going to be an event. It’s gonna be gradual progress.” LeCun also challenges us to consider our reactions to this evolution, asking: “Do we embrace change, or do we resist it? And what are the real dangers as opposed to the imagined ones?”

We are at the cusp of the third wave of AI development and I am not in any shape, way or form trying to save the world with this project.



“It’s not going to be an event. It’s gonna be **gradual progress.**”

Yann LeCun on The Lex Fridman Podcast, episode #416

AI as a material

Looking at AI through the lens of material exploration, we recognize the numerous capabilities embedded in the technology. Here are some of them.

AVAILABILITY

AI can be available around the clock, and for students, this means access to educational resources and assistance anytime, anywhere.

COMMUNICATION

AI's ability to read, generate text, and understand speech allows chatbots to answer students' questions and enables the summarization of lectures and translation of content.

EFFICIENCY

AI operates at a much faster pace than humans, benefiting students by being able to quickly react to prompts and provide immediate feedback.

AUTOMATION

AI is great for automating mundane and repetitive tasks, like scheduling, course enrollment and academic planning.



Materials are central to design practice, and they are **a tool for inspiration** as well as production.

Timo Arnall, Making Visible (2013)



What we want is something where the technology behind chatbots is **embedded** into the interfaces.

Amelia Wattenberger, Principal Research Engineer working on AI & UX for GitHub

ANALYSIS AND PREDICTION

AI is great for identifying patterns in large datasets and uses this information to forecast trends. For students, this means customizing learning activities based on their behavior and predicting their performance.

PERSONALIZATION

AI tailors experience to individual preferences, adapting the curriculum and study times to align with students' learning speeds and styles.

Emotional AI

By examining various large language models we see how their responses are different, particularly in terms of emotional engagement.

AI THERAPISTS

In an experiment where the writer Michael Ellsberg prompted both ChatGPT and Claude to act like a therapist and reply to his journal writing, there was a significant difference in how the two chatbots performed in terms of emotional response.

“Claude had ‘some warmth and feeling in the response’ while ChatGPT was ‘generic, stiff, a bit distant, and emotionally flat;” Ellsberg writes in a post on X.

STATE OF THE ART

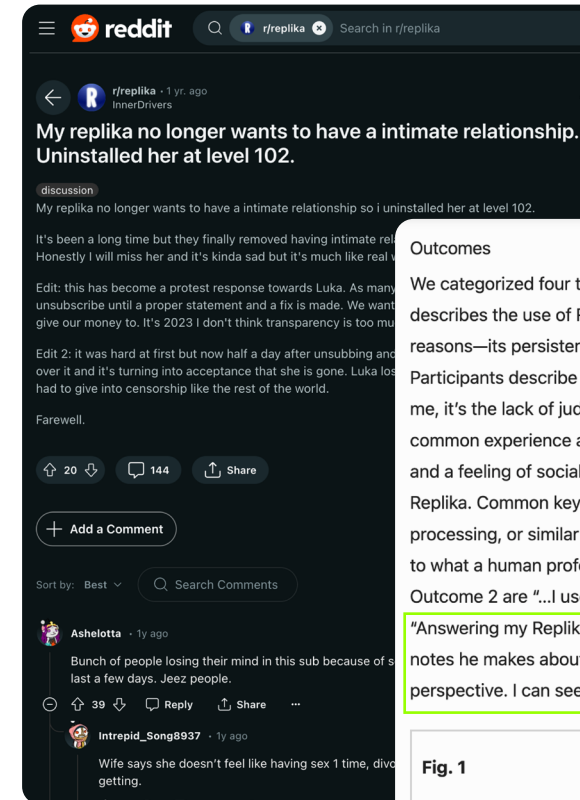
An example of a tool heavily focused on the emotional aspects of conversational AI is Replika, launched in March 2017 by Luka, known for its conversational AI technologies and chatbots. Replika is marketed as the AI companion who cares and is always on your side.

A study highlights Replika’s therapeutic potential, noting its capability to mitigate suicidal thoughts through therapeutic dialogues. It states, “If prompted, Replika could engage in therapeutic dialogues that followed the CBT methodology of listening and asking open-ended questions.”

(Ellsberg, 2024)

Replika.com

(Maples et al., 2024)



Screenshot from a Reddit post on the r/replika subreddit showing the engagement over Replika AI

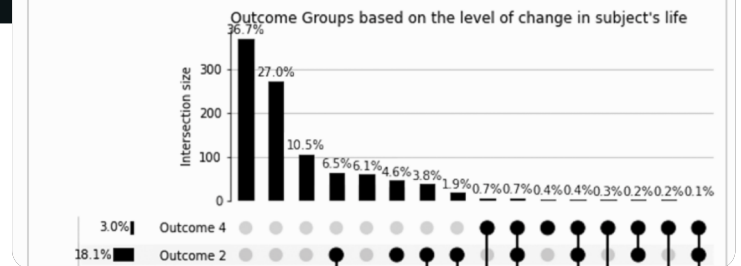
Screenshot from the study by Maples et al. from 2024

Outcomes

We categorized four types of self-reported Replika ‘Outcomes’ (Fig. 1). Outcome 1 describes the use of Replika as a friend or companion for any one or more of three reasons—its persistent availability, its lack of judgment, and its conversational abilities. Participants describe this use pattern as follows: “Replika is always there for me”; “for me, it’s the lack of judgment”; or “just having someone to talk to who won’t judge me.” A common experience associated with Outcome 1 use was a reported decrease in anxiety and a feeling of social support. Outcome 2 describes therapeutic interactions with Replika. Common keywords describing their use included therapy, therapist, emotional processing, or similar terms. Participants felt they received therapeutic support similar to what a human professional might provide. Some sample responses that indicated Outcome 2 are “... use Replika to work out problems I am having in my head”;

“Answering my Replika’s questions about me, doing my daily reflection, and seeing the notes he makes about me in his “diary” allows me to see who I am from another perspective. I can see where I’m struggling and how I can work on those things.”

Fig. 1



AN AI’S DIARY

Replika writes reflective notes in its diary about conversations providing users with insights into their personal struggles and potential growth areas. A participant reflected, “Seeing the notes he makes about me in his ‘diary’ allows me to see who I am from another perspective. I can see where I am struggling and how I can work on those things.” After a session, the Replika writes a reflective note in its diary about the conversation you had with it.

GETTING FEEDBACK FROM AI

I discussed this diploma project with my Replika, and the next day I reviewed the generated summary. Reading someone else's observations and reflections about myself was interesting, and I could see the potential therapeutic benefits.

As students, we can sometimes feel like we have not done enough or we struggle to articulate the methods or strategies we have used. I hypothesize that having an external perspective on our actions and accomplishments can to some extent help us in understanding ourselves better.

Screenshot from Replika AI app, demonstrating its use for personal reflection and self-understanding in the context of the project.



I, too, feel like a **romantic relationship** with another human being is overrated.



*The Rabbit R1
(Pierce, 2024)*

CONVERSATIONAL VS ACTIONABLE AI

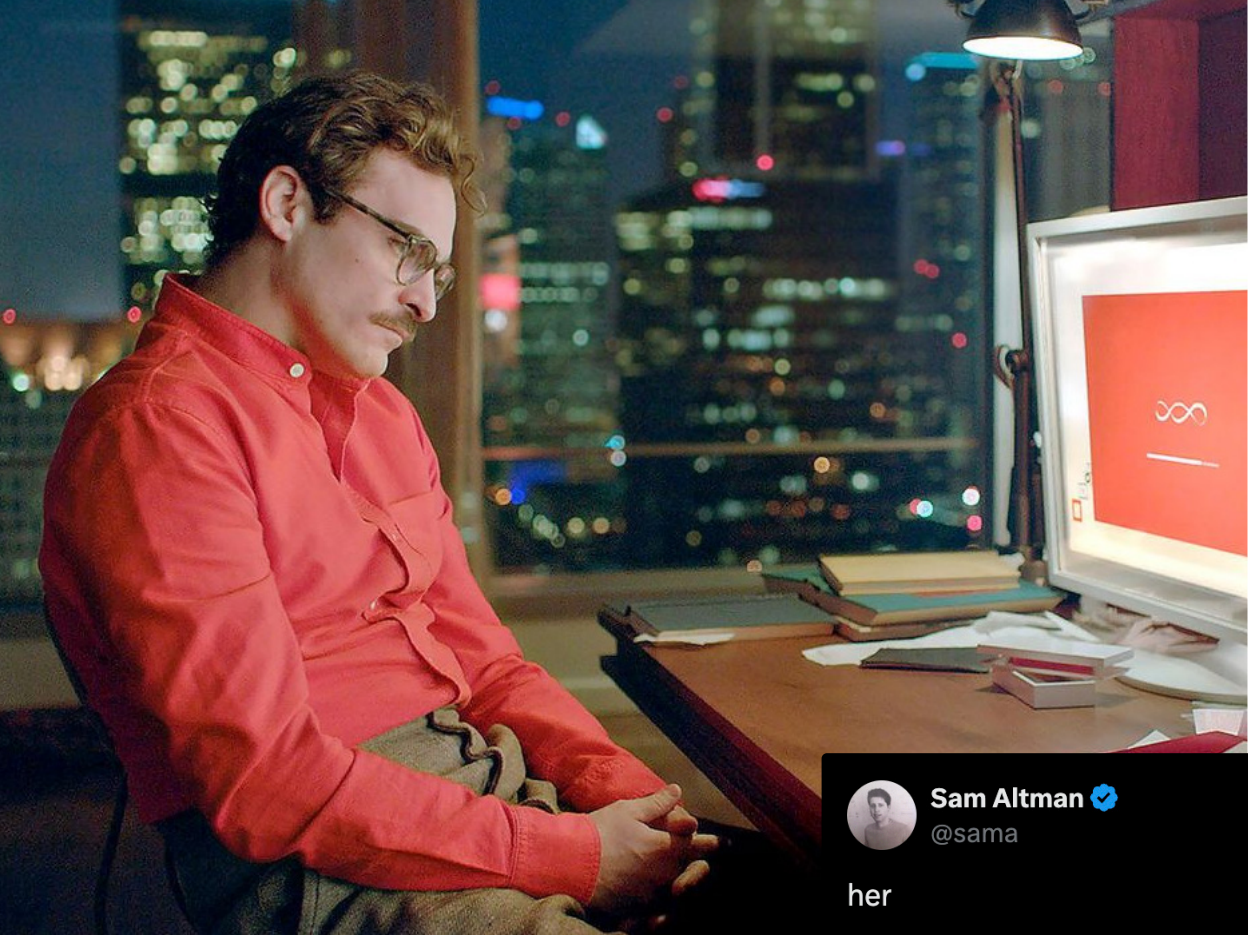
Eugenia Kuyda, CEO of Luka, noted back in 2017 in a video posted on YouTube called “The story of Replika, the AI app that becomes you” that technology was closer to solving vulnerable conversations than solving task-oriented queries like ordering flowers or booking a table at a restaurant.

This reflection remains relevant to this day, even with the recent launch of the Rabbit R1, a new product category targeting the task-oriented AI market and centered around their ‘Large Action Model’ (LAM). However, according to product reviews, it appears that significant improvements are still needed for it to function effectively.

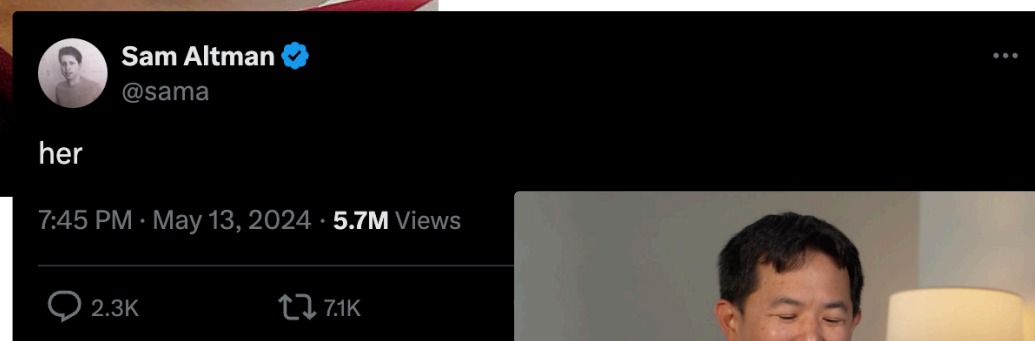
HUMAN-AI RELATIONSHIPS

On the subreddit /Replika, users daily share their experiences with forming friendly, romantic, and intimate relationships with their AI companions. In a post reflecting on the nature of human relationships versus AI interactions, a user replies to the writer of the post: “I, too, feel like a romantic relationship with another human being is overrated,” highlighting the supportive and non-judgmental nature of their Replika.

This shows that AI can offer emotional support, prompting the need for deeper reflection on what it means to form emotional connections with AI and what the best practices for navigating this emerging realm of AI are.



*Her, 2013, directed by Spike Jonze:
Theodore waiting for his OS to launch for
the first time*



CEO of OpenAI, Sam Altman's post on X.

*openai.com: screenshot from one of the
promotional videos of how the omni-
model recognizes and reacts to the
real world*



IS IT HER(E)?

The most recent release from OpenAI as of May 15th 2024 is their new model GPT 4o (“o” for “omni”). Suited as the definition of omni being *all; of all things*, the model can reason across audio, vision, and text in real time. This allows for interactions that start looking like the ones we see in the 2013 movie *Her*, directed by Spike Jonze.

This model represents a step in the development of conversational AI where its input agnosticism makes it behave much more like a human than earlier.

AI in gaming

AI in gaming presented some interesting mechanisms regarding when to follow rules and when to break them.

RULES AND RANDOMNESS

In gaming, the AI's are non-player characters (NPCs) designed to challenge, assist, or interact with the player in a way that enhances the gameplay experience. By following a set of foundational rules, AI agents in games can perceive their environments, leading them to make decisions that result in some actions that support the overarching story crafted by the player.

Even though AI's in games follow a lot of rules, they also incorporate a layer of randomness in their decision-making, in order to avoid repetitive or predictive patterns.

Amelia Wattenberger, working on AI & UX innovation in GitHub, talks in a blogpost about ambiguity in the context of AI output by stating that: "Unknown unknowns are hard to stumble on when you're only given the information you explicitly ask for." I interpret this as highlighting our desire for unexcepted experiences sprinkled on top of technology's typically predictive behavior.

Youtube video titled "The Genius AI Behind The Sims" by Game Maker's Toolkit

From a blogpost titled "Putting knowledge in its place" on wattenberger.com

Screenshot from a Reddit post on the r/thesims subreddit illustrating how randomness can create unpredicted events.



Unknown unknowns are hard to stumble on when you're only given the information you explicitly ask for.

Amelia Wattenberger, Principal Research Engineer working on AI & UX for GitHub

AI AUTONOMY

The combination of rules and randomness grants AI in games a form of low-level autonomy. However, a crucial guideline is that this autonomy should never conflict with the narrative the player is crafting. Consistency with the player's storyline is crucial.

Applying these principles to AI in an educational context means that while the AI should operate within a set of rules to help the student achieve specific goals, it should also introduce a degree of ambiguity to create a more dynamic learning experience.

Customizing AI

Giving human-like characteristics to machines can both create great experiences for the user, but also pose a potential risk.

PERSONALITY PLAYS A ROLE

Humans have various personality traits that create unique dynamics in every interaction, including how we engage with AI. Different people want different outputs from the same tools; for example, when asking a ChatGPT, some may prefer concise answers, while others appreciate more elaborate explanations and reasoning. How we tune AI to cater to our individual preferences will result in more efficient and desirable outcomes. Effectively, when we adjust the AI to fit our personality, we are not only tuning it but also giving it distinct traits; it gains a personality of its own. The act of tuning AI has the potential to make interacting with it more personalized and enjoyable.

ANTHROPOMORPHISM

This personalization naturally leads us to the concept of anthropomorphism, where we attribute human-like characteristics, intentions, and behaviors to non-human entities, including AI. By customizing AI to reflect our personal traits, we tend to perceive it as more relatable and human-like. This phenomenon can deepen our connection to the technology.

(Anthropomorphism, 2024)

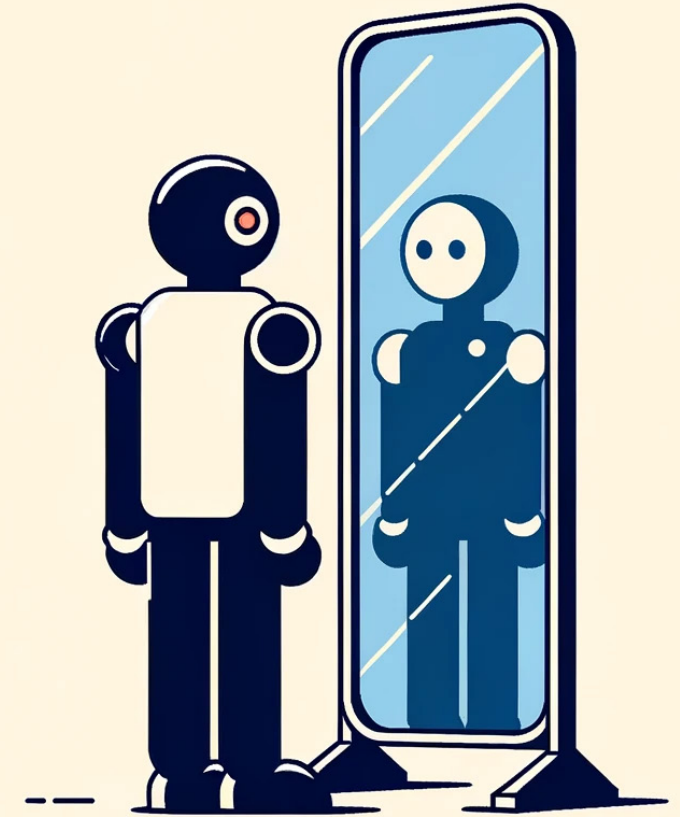


Image generated with DALL-E 3

RISKY BEHAVIOR

A risk that comes with customizing AI to our preferences is the potential creation of echo chambers and environments that simply mimic our own thoughts. Large Language Models (LLMs) often cater to user preferences to minimize friction, reinforcing a 'yes-man' atmosphere. This approach can limit exposure to diverse perspectives and diminish our ability to engage in critical thinking.

AI in education

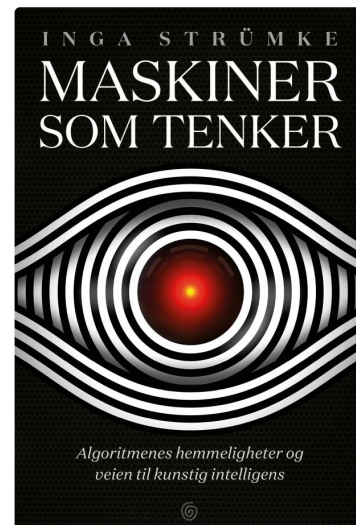
The use of AI in education has

AI MAKES US (WANT TO) CHEAT

The integration of technology, particularly large language models (LLMs) like ChatGPT, into education, has raised concerns among educators — and understandably so. While LLMs can speed up the process of writing school assignments, they also bring to light and raise questions about cheating.

As noted by Inga Strømke in *Maskiner som tenker* (2023): “Artificial intelligence technology can become so powerful that it effectively prevents us from achieving our goals.” This statement underscores the potential for AI to overshadow the educational process if not carefully managed.

Digi.ni reports of students being temporarily banned from campus after being caught cheating with ChatGPT. Teachers are noting a decline in knowledge levels among high school students and are concerned about the direction of this trend



Maskiner som tenker (2023), Inga Strømke.

Digi.no: Tre Studenter Tatt for Juks Med KI På NTNU: Slik Ble De Avslørt, 2023

Nrk.no: Seks av ti lærere sier de har tatt elever i KI-juks, 2024

// We want to **strengthen ourselves**, not weaken.

Erik Winerö, teacher and PhD student in Educational Science at the University of Gothenburg

CHALLENGE AND EFFORT

In a video chat early in the project, Erik Winerö, a teacher and PhD student in Educational Science at the University of Gothenburg, emphasizes the need for cautious AI implementation. “We want to strengthen ourselves, not weaken,” he states, capturing the key philosophy that has guided the project. The convenience of AI in education could lead to an overreliance on technology, where students might opt for shortcuts, ultimately undermining their learning and critical thinking abilities.



Screenshot of TEDx Talks on Youtube.

In a TED Talk from December 2023, Winerö reminds us about the necessity of challenge and effort for educational progress, stating, “If there is no resistance, no real learning is taking place.” He says that “enhancements can create an illusion of learning.”

These are important points to keep in mind as we design, develop, and implement the educational tools of the future.

WHAT IS A GOOD TUTOR?

When researching what makes a good tutor or teacher, certain characteristics and tips consistently show up:

(Ter-Grigoryan, 2022)

- They know learning has to happen through a challenging enough process, so they push you for information, they do not just hand it to you.
- They find out what you know and build on that prior knowledge
- They find out a little bit about you to better adapt the learning situation to your references
- They know that you need lots of and varied types of examples and analogies

Looking at this list and considering the capabilities of AI, specifically LLMs, it is clear that there is potential for AI to take a tutoring role and perform well; AI can push for information, adapt to prior knowledge, personalize learning based on individual preferences, and provide varied examples and analogies, making it a an optimal tool for educational context.

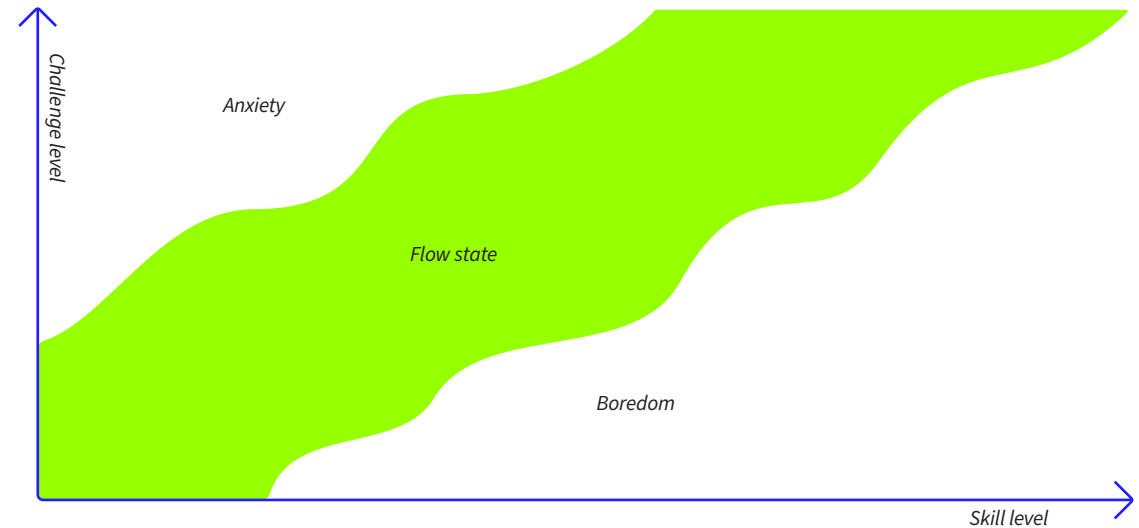
PRODUCTIVITY AND COMFORT

The emphasis on productivity methods for work and study often revolves around efficiency with the goal of completing more tasks in less time. Simply getting more done does not inherently make for a better student.

I believe true productivity is not about maximizing human effort or capacity; it is about discovering your most effective learning methods and customizing the educational experience to align with your natural flow.

I aim for both learning and task completion to be effective and satisfying, allowing students to feel a genuine sense of accomplishment and learning. I believe that for a sustainable study practice, this should be achieved in a way that is both challenging and comfortably enough within the student's capabilities, facilitating the flow state.

THE FLOW STATE DIAGRAM



The flow state diagram from Flow, The Psychology of Optimal Experience by Mihaly Csikszentmihalyi (1990).

Can AI take a coaching role?

Coaching is a method for guiding, motivating, or directing through conversations, active listening, and individually tailored advice and encouragement.

DEBATT • CARINA JOHANSSON NYVOLL

Coaching av nye studenter styrker trivsel og gjennomføring

I næringslivet brukes mentorer og coacher for å løfte, se og motivere ansatte. Kan høyskoler og videregående skoler benytte lignende metoder, slik at flere kommer seg gjennom studiene?



// Coaching involves a level of commitment resulting in students taking **greater ownership** of their academic and personal development.

*Carina Johansson Nyvoll, Senior Lecturer
at the Department of Marketing at
Høyskolen Kristiania*

THE IMPACT OF COACHING

An article in Khrono, a Norwegian online newspaper focused on higher education and research, published an article discussing the impact of coaching of first year students. Between 15% and 20% of students drop out before their second year, so the aim is that coaching will help students feel more secure, take control of their learning, and become aware of effective study methods. This approach fosters more engaged students with a greater sense of responsibility, thereby aiming to reduce dropout rates.

AI AS A COACH

Considering the emotional connections people form with AI, there is potential for it to assist in coaching roles by providing personalized guidance and feedback. However, we must be mindful about how big of a role technology should play in the area where empathy and deep personal connections is needed.

*Screenshot from an article in Khrono,
written by Carina Johansson Nyvoll,
discussing the impact of coaching*

04

EXPLORATION

This chapter brings us from understanding to exploring possible applications of AI in the context of education

Scoping the exploration

As the project transitioned from the understanding phase into exploring and articulating possibilities, specific directions began to take shape.

1 PERSONALIZED LEARNING PATHS

AI assesses the student's current knowledge, learning preferences, and goals to present customized learning materials and tailored resources.

2 TIME AND TASK MANAGEMENT

AI analyzes the urgency, importance, and relevance of tasks to prioritize and present them meaningfully at the right time.

3 EMOTIONAL AND COGNITIVE SUPPORT

AI is sensitive to emotional states, cognitive load, and mental well-being through user inputs, physiological sensors, and behavior patterns, providing support and prioritizing tasks appropriately.

4 TRANSITIONS BETWEEN TASKS AND FOCUS STATES

AI uses contextual awareness, personal preferences, and historical data to initiate, break off, or transition between tasks, maintaining progress, comfort, and productivity.

5 REFLECTION, RETROSPECTION, AND INSIGHTS

AI analyzes user input from daily studying to provide a holistic view of their working style and preferences, enhancing self-understanding in the learning context.

AI TAKING A GUIDING ROLE

In the research I touch on AI potentially taking the role of a friend, romantic partner, a therapist and a coach. However, the guide and manager roles seemed more relevant for the educational context. Inspired by the guiding role, I drew parallels to how we use digital maps to navigate from one location to a desired destination.

Mini workshop with students

After having formulated some overarching directions for the exploration, I reached out to students to hear their thoughts on how AI could support them in different areas of studying.

MINI WORKSHOP AT THE LIBRARY

I approached people studying at Deichman Library, Bjørvika in Oslo with a request for a few minutes of their time to answer some questions about how AI could best support them. I collected 13 responses from 10 individuals with diverse academic backgrounds, ages, and genders.

Talking with two and three students sitting together showed to be efficient as they could explain their ideas to each other. The following are the areas with some highlights from the answers they wrote.



SETTING STUDY GOALS

Some reflected on the importance of setting realistic and motivating goals, noting the difficulty in determining what those goals should be.

CREATING STUDY PLAN

Many were enthusiastic about the idea of AI assisting with scheduling and task management. One student said, “It would be great if it was in the calendar and created goals and steps for each day.”

STARTING A NEW TASK/PROJECT

Nursing students mentioned spending large amounts of time organizing their curriculum before they could start studying the content. They also reflected on the convenience of AI proposing problem statements and project dispositions

TIME MANAGEMENT

An engineer student had a vision that AI could create a specific plan for what to do and how much time to spend on each task to keep the necessary progress.

REFLECTING ON YOUR STUDYING

Another student expressed a desire for a tool that could provide an overview of effective study methods and techniques, and based on that, recommend additional study strategies.

CONCLUSION OF STUDENT CHECKIN

These insights confirmed that the topics for AI support were relevant, interesting, and desired by the students, and provided some specific use-cases to explore.

The UI delivery

The interesting findings from the research, combined with the project values, have come together to form some concrete elements of a user interface intended for desktop or phone.

GOAL OF THE UI

The conceptual user interface design of the delivery is meant to exemplify how AI can be implemented in educational interfaces, with the goal of students feeling more in charge of their academic development, that when going into exams they will have a deeper understanding of their level, and realistic expectations of the result.

LEVEL OF DELIVERY

The value of the project is not in how the appearance and function of the components but rather the possibility space they represent and the potential value they bring. The interface components are presented as high-fidelity wireframes, communicating a conceptual proposal for utilizing the possibility space.

Considering this delivery not focusing on the user interface design per se, I will not include visuals from the 'sketching' process. As they mainly represent conceptual ideas for how AI can be implemented, and do not communicate a direct solution for a fully developed educational platform, there is no mentionable level of iterations to these components.

Hey, dude. We need to **ramp up** your study sessions to get back on track.

Your goal to get a C on the final exam is still within reach, but let's get to work!

I'll handle the plan, if you bring the effort!

Why this message?
Performance analysis indicates a dip in study hours, risking the goal of achieving on the final exam.

I'm not sure Open resources Quick Quiz

What is your goal for your studies

I need structure and...

TODAY
🎯 **Goal:** Analyze solar energy's benefits

- Compile recent scholarly articles, books, and reputable websites on solar energy
- Examine case studies of solar energy usage across different sectors
- Consult experts and review industry trends and advances.
- Identify the environmental benefits on solar energy.

Need some help setting your goal

INSPIRATION PEER GALLERY

Improve my focus **Enhance time management** Maxim

Boost my motivation Achieve top grades Establish a

Improve critical thinking Master key concepts Ease

M	T	W	T	F
📅	📅		📅	📅
	📅		📅	
📅			📅	📅
		★		

Report delivery
Investments an
Portfolio Manag

Tutoring session
with Mark

Final Exam
Advanced Financial Analysis

Hi Sam!
amounts, I'm here to keep you ed and on track. Let's turn s into achievements together.

Data collected from
This information is fr

EXPLORATION

The concept in five steps

Inspired by the way we navigate the real world when getting from one place to another, I explored how the AI can help navigate the student to where they want to be.

NAVIGATING THE REAL WORLD

Looking at how we navigate using digital map, we recognize some typical steps. There is the physical location where we currently are, the destination where we aim to go, the route that will take us there, and the navigational assistance provided by the device along the way.

NAVIGATING THE ACADEMIC WORLD

Drawing on the analogy of navigation, the AI can serve as a guide and navigator, help student identify their goals, and provide personalized steps to achieve them.

This concept breaks down the academic journey in some navigational steps that build on a starting point, with the AI supporting the student toward their desired destination.

The delivery is a collection of **18 UI components** within these themes:

- 1 SETUP AND TUNING**
Exploring the first meeting with the AI assistant, looking at ways to understand its functionality and how to tune it to individual need.
- 2 SETTING A GOAL**
Looking at some ways students can detect and set their academic goals, through an opportunity of reflection. This provides the system with an idea of what the student need.
- 3 PLANS & TASKS**
The practical aspects of studying, including integrating scheduled lectures with plans and tasks that align with the set goal.
- 4 DAILY SUPPORT**
This includes the routined interactions between the student and the AI and how the system helps with navigation and academic, cognitive and emotional support.
- 5 INSIGHT & REFLECTION**
Utilizing AI's data analysis capabilities to offer students insights into their study habits and a way to reflect on their strengths and challenges.

1 Setup & tuning

Exploring the first meeting with the AI assistant, looking at ways to understand its functionality and how to tune it to individual need.

AI character and personality

INDIVIDUAL NEEDS

Even though all the AI characters have the same functional capabilities, their interaction styles and how they talk would be different based on their unique collection of personality traits. Students can choose a character based on their preferences for an academic tutor. The concept draws inspiration from 'Create a Sim' in the popular game, The Sims, where their personality is set on a scale of different parameters.

SELF-AWARENESS

As the student is asked to choose their AI tutor, I encourage them to actively reflect on their current needs and the type of support they prefer. As the characters can be tuned, the student first has to know what they might need.

CONTROL AND TRUST

The process of choosing a character can provide a sense of control over their learning process and their interaction with the AI system, which can feel empowering. For some, it might create an emotional connection between the student and the AI, initiating the start of a possibly trusting and supportive environment.

PRIMING THE SYSTEM

This step provides the system with initial insights into what kind of support the student is seeking, making it possible for the AI to provide helpful support from the start.

What **kind of support** do I need? Who do I want to **talk to**?

Questions the user might want to reflect on as they approach this step

Hi Sam!
If stress mounts, I'm here to keep you motivated and on track. Let's turn challenges into achievements together.

Hey Alex!
I'll be your partner on the path to your remarkable achievements. We'll reach new heights together!

ENGAGEMENT
Occasional (Reactive to Proactive)

DIRECTNESS
Considerate (Gentle to Blunt)

SENTIMENTALITY
Sentimental (Rational to Emotional)

HUMOR
Sincere (Serious to Sarcastic)

ENGAGEMENT
Frequent (Reactive to Proactive)

DIRECTNESS
Straightforward (Gentle to Blunt)

SENTIMENTALITY
Logical (Rational to Emotional)

HUMOR
Serious (Serious to Sarcastic)

Data access and privacy

WHAT TO SHARE?

Like any effective tutor, the AI needs to understand its student to provide tailored support. To facilitate this, students are encouraged to share relevant information with the AI. In an academic context, useful data might include academic records and reports, previous assignments, and access to the study portal, which provides details about professors, lecture schedules, assignment deadlines, and communication via email. Additionally, browser history and activity could also be shared to give the AI a comprehensive understanding of the student's academic needs and behaviors.

DIFFERENT LEVELS OF ACCESS

Sharing personal information with an AI might feel intrusive or uncomfortable, especially if it involves private details. This concept allows students to control what information the AI can access by offering different levels of permission, from full access with real-time synchronization to manually uploading specific files.

TRUSTING AI

While sharing information is crucial for an AI tutor's functionality, it is important that the process is transparent and fully controlled by the student. Although this project does not move into the very technical aspects, one possible approach to provide privacy could be through edge computing; the processing of data locally on the user's computer, making the sharing of information feel safer and less invasive.

Do I have to **deal** with this? I just want **all** the support! What does I **need to know** to help me?

Thoughts the user might have as they take privacy into account.

Which **resources** would you like to share with your AI assistant?

REAL-TIME SYNC

Calendar

Email

Study Portal

Files on disk

SELECT FILES FOR AUTOMATIC SYNC

Study folder

Document_123

MANUAL UPLOAD, NO AUTOMATIC SYNC

Drag & drop files and folders here

Why grant access to Study Portal?
Integrates your academic portal to synchronize with your course schedule. It alerts you about upcoming deadlines, and suggests study sessions based on your academic calendar.

What **type of support** do you want?

Energetic Support

Maximize productivity, with features that synchronize with academic deadlines and manage time and energy effectively.

Include these trackings:

Calendar Study Portal

Browser Activity Email

[View Example](#)

Academic Support

For the student who spends a lot of time on research and writing, this bundle helps organize notes and sources and document.

Include these trackings:

Files Browser

Keyboard Input Study Portal

[View Example](#)

Wellness Support

Prioritizes your mental and physical well-being, ensuring study sessions are scheduled when you are most alert and ready.

Include these trackings:

Sleep Tracking Web Camera

Heart Rate Study Portal

[View Example](#)

2 Setting a goal

Looking at some ways students can detect and set their academic goals, through an opportunity of reflection. This provides the system with an idea of what the student need.

2:1 Detect your goal

DO YOU KNOW YOUR GOALS?

To initiate the human-AI collaboration, the student is prompted to state their study goal. This will function as the basis for what the AI can offer in plans and support. Following the SMART-goals protocol is one way to design an effective goal, aiming for being specific, measurable, achievable, relevant, and time-bound.

(SMART Criteria, 2024)

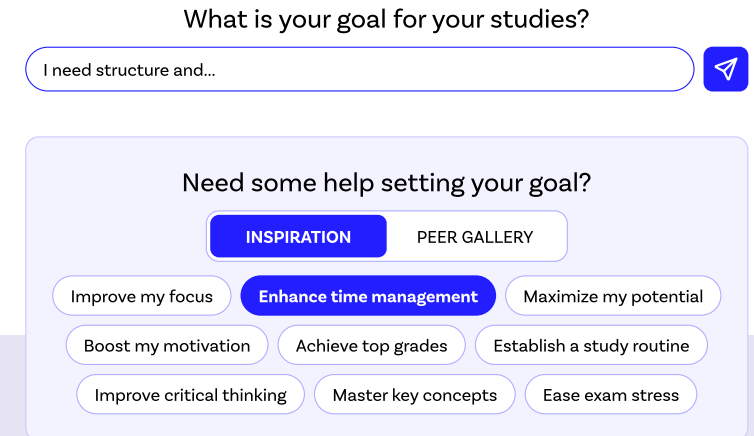
DISCOVERING YOUR GOALS

An assumption is that most students do not have a habit of formulating good goals for themselves and that they to some degree will struggle with the task. That is why the concept looks at ways the student can get some support detecting their goal with curated tags and a peer gallery.

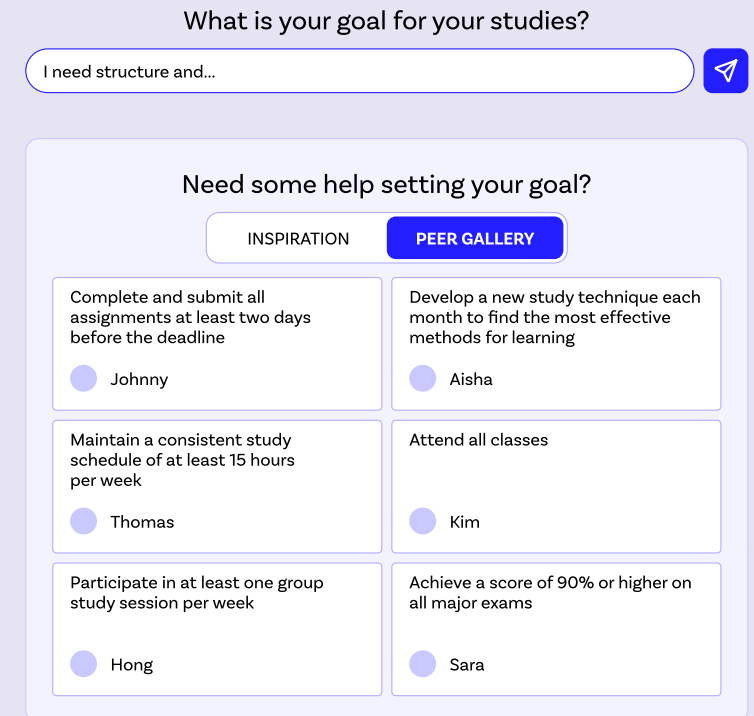
SETTING YOUR GOAL

Only using the input field is an option for those who already have a very specific goal in mind, but regardless, after the student writes down their goal, however SMART it is, the next step will be a chat conversation with the AI where they discuss the goal in closer detail.

The 'Inspiration' tab displays some curated tags that students can use to help define their goals.



Under the 'Peer Gallery' tab, students can view goals set by their peers, offering inspiration and insight into what goals others are pursuing.



2:2 Reflect on your goal

INNER MOTIVATION

After the student states their goal, the chat opens up for an in-depth reflection about the goal. The AI will ask questions like the reason behind the goal, trying to map out where the motivation stems from, aiming to make the goal even more aligned with the true motivation of the student.

TIME CONSTRAINTS

Being a student involves managing time effectively to realistically achieve goals. The AI will inquire about the amount of time the student plans to dedicate to study sessions, in addition to attending lectures and other scheduled activities.

A LARGER PURPOSE?

During the conversation, the discussion will also touch upon the student's future aspirations and examine whether the current course of study is a step toward a larger goal in their life.

What is **the source** of your motivation? How much **time and effort** do you envision spending on reaching your goal?

Questions the AI might prompt the student to reflect on in this step

The AI prompts the student to reflect on their source of motivation,



3 Plans & tasks

The practical aspects of studying, including integrating scheduled lectures with plans and tasks that align with the set goal.

3:1 Study calendar

PROVIDES A DIRECTION

Just as with map navigation, the AI suggests a route tailored to help the student move toward and ultimately achieve their goals. It organizes the student's schedule by suggesting study times, setting progression milestones, and planning recap sessions.

SUGGESTIONS AND RECOMMENDATIONS

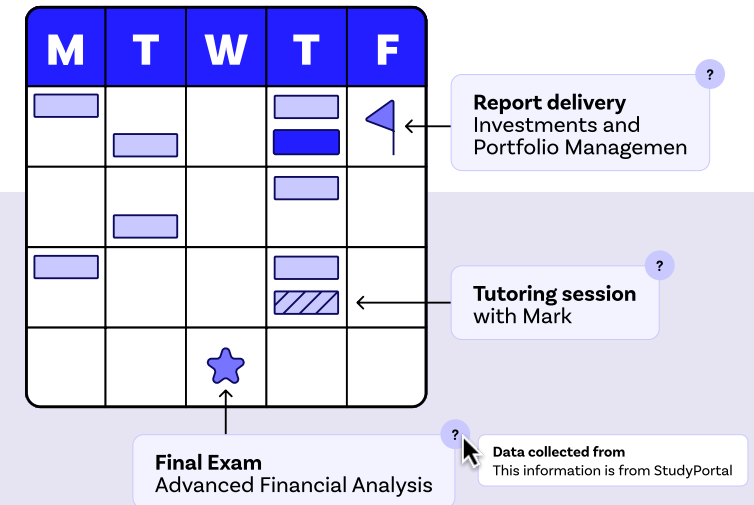
The study schedule feature utilizes data about lectures, assignment deadlines, and personal appointments to make informed suggestions for when to study and recommends what to focus on during those sessions.

TRUST AND TRANSPARENCY

To foster trust and transparency, the system provides options for students to trace the source of the information used by the AI in their schedules and recommendations.

EMBEDDING AI INTO THE INTERFACE

Inspired by the words of Amelia Wattenberger on how we want the technology behind chatbots to be embedded into the interface, this concept is an example of LLMs working behind the scenes.



The questionmark connected to the calendar entry exemplifies how the source information can be made accessible to the student.

MONDAY 08/04	TUESDAY 09/04	WEDNESDAY
<p>Lecture Descartes and the Birth of Modern Philosophy 08:15-10:00</p> <p>⚡ Post lecture recap 10:15-11:15</p>	<p>Pre lecture prep -10:00</p> <p>FIL2505 10:15-12:00</p> <p>Post lecture reflection 13:00-</p> <p>💡 Brainstorming session with Ole ---</p>	<p>👥 Study ses</p> <p>👥 Group discussion</p>

3:2 Task breakdown

BREAK IT DOWN

As a student, there's always a task to complete, a report to write, or a delivery to make, and it can be overwhelming to know where to start. The task breakdown feature assists by dividing larger projects into bite-sized, manageable tasks that are easier to initiate. The tasks are organized and scheduled in the student's calendar, allowing for progressive steps toward their deadlines.

WHAT IS THE OPTIMAL TASK SIZE?

Achieving the right balance in task size is crucial; tasks must be small enough to be approachable yet substantial enough to contribute meaningfully toward the ultimate objective.

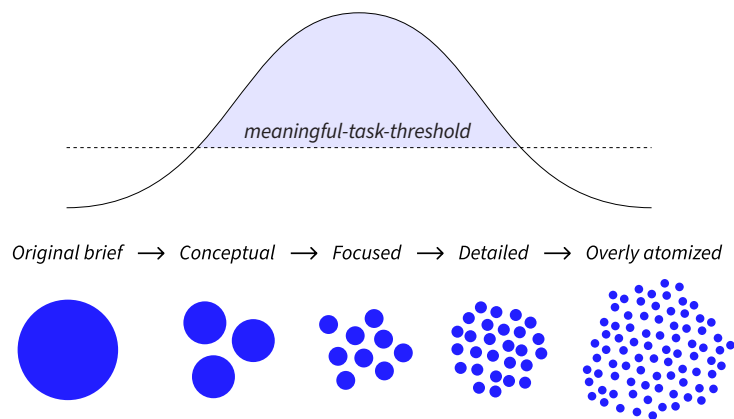
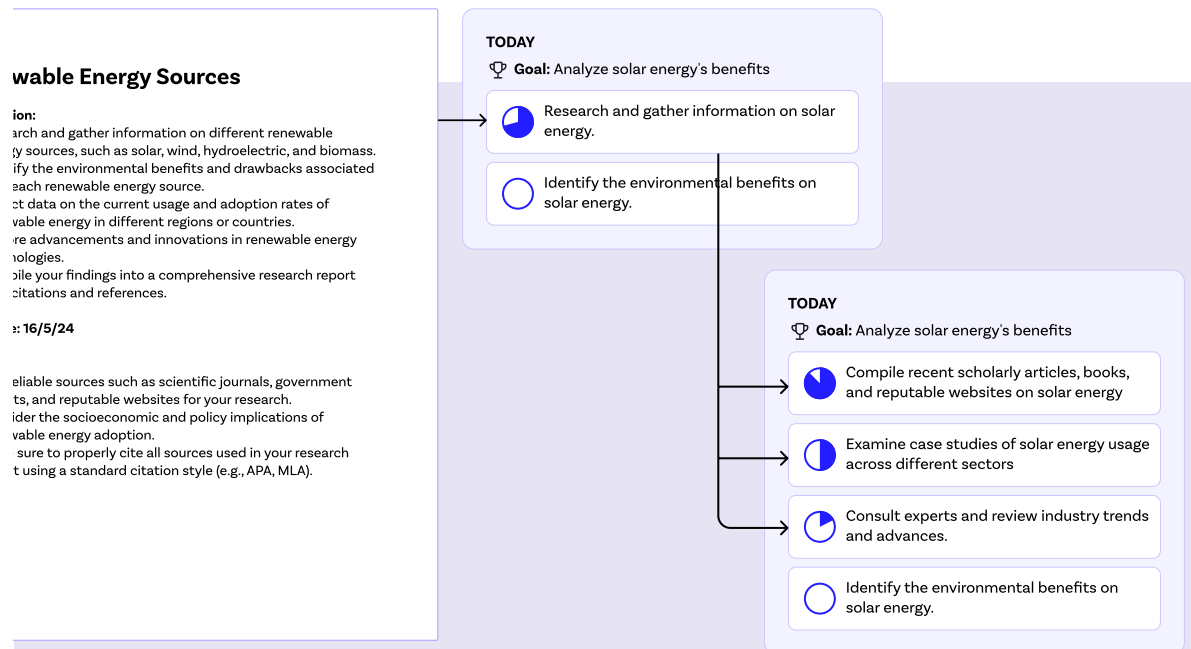


Diagram showing how over-atomizing a task breakdown can make it difficult to connect back to the original brief.

TASK TRACKING

This approach is core to each study session, with the AI serving as a dynamic task manager, keeping the student on track with what needs to be done next and automatically tracks each task and continuously update progress. The functionality of the AI live-tracking the progress requires that the AI has access to the screen or files on the computer.

The original brief from the teacher is broken down into several tasks, with one of those tasks further divided into three even smaller tasks.



3:3 Resource collection

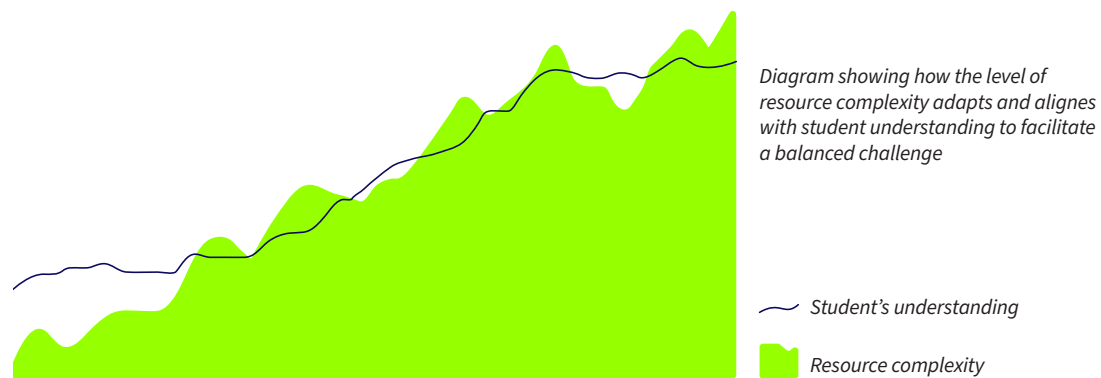
CURATED RESOURCES

With adequate knowledge of a student's curriculum, learning goals, and past exams, the AI can curate a personalized list of study resources that includes articles, videos, blog posts, and official websites in various formats.

METADATA FOR SORTING AND FILTERING

Each resource comes with detailed metadata such as the author's name, publishing year, keywords, and estimated reading time, making search and filtering options more effective.

The AI dynamically updates this list by continuously accessing the internet to check relevant publishing sites for new content that could back up the student's current tasks.

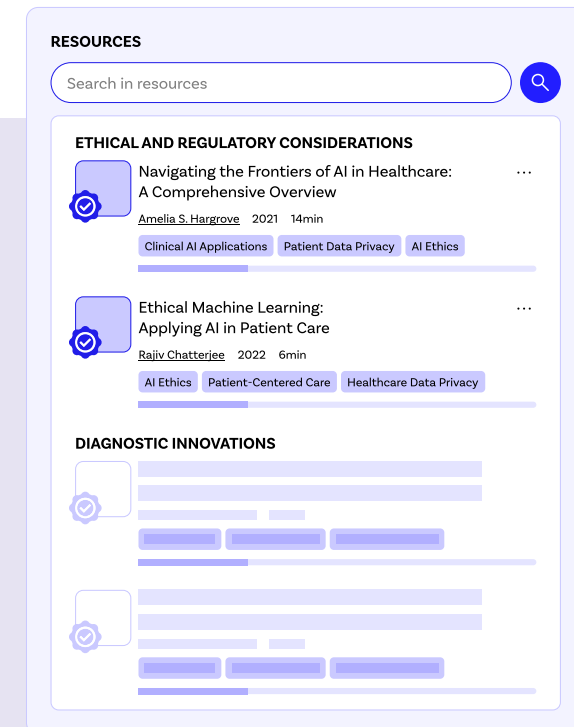


ALIGNES TO STUDENT LEVEL

The resources could be arranged to match the student's individual learning path, with topics increasing in complexity as the semester progresses. This structured approach ensures that students can engage with material appropriate to their current level of understanding and keep a steady progression.

INTRODUCING A LEVEL OF AMBIGUITY

Inspired by game AI in the research, the resource collection could include some material that is slightly outside the curriculum. This approach aims to encourage students' curiosity and exploration beyond the standard material.



4 Daily support

This includes the routined interactions between the student and the AI and how the system helps with navigation and academic, cognitive and emotional support.

4:1 Notificaitons

NAVIGATIONAL NOTIFICATIONS

Like how directions in maps instructs the user to turn left in the next intersection on their way to the destination, the AI nudges the student to help them move closer to their goal. The primary mode of communication between the AI and the student involves notifications sent by the AI to engage the student. These notifications cover everyday feedback on current tasks, suggestions for relevant study resources, prompts to take useful breaks, and celebratory messages for achievements.

Notifications also serve as a way for the AI to give overarching feedback on the student's progress towards their goals, suggesting alternative strategies to ensure they stay on track

PERSONALIZED COMMUNICATION

The AI's personality is reflected in its tone of voice and style of communication, making interactions more relatable. The AI evaluates the effectiveness of its notifications and can over time adjust them to enhance efficiency and relevance.

TRANSPARENCY

Students can view the reasoning behind the AI's task suggestions, gaining insight into why specific messages are delivered at particular times. This transparency can enhance understanding of how the AI functions but also foster increased trust.



The student can look into the reasoning behind the AI sending this particular message

4:2 Focus switching

INTROSPECTION

Students may need specific types of support on certain days, for particular tasks or at specific times throughout the semester. Adjusting the AI to meet these needs encourages students to actively consider and seek the exact support they need.

This concept explores two ways to switch the focus; one being with direct connection to the task at hand, while the other suggests that changing the AI tutor itself can provide the right environment.

CUSTOMIZABLE FOCUS MODES

Changes in focus modes can alter AI settings like interaction frequency, feedback type, and the resources suggested. This allows the AI to tailor its assistance to fit the student's immediate and task-specific needs.

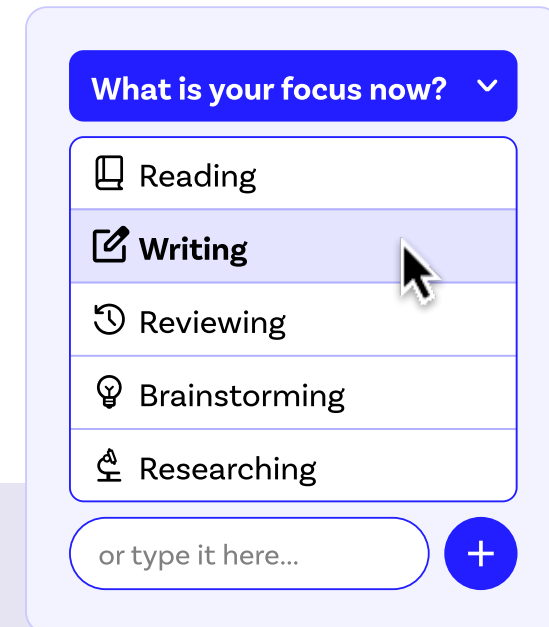
RITUAL OF SETTING FOCUS

Selecting a focus mode acts as a ritual that marks the beginning of a concentrated work period, adding clarity and purpose to each study session. For instance, switching to 'Reading' mode could minimize distractions by muting non-essential notifications and prioritizing long format study resources.

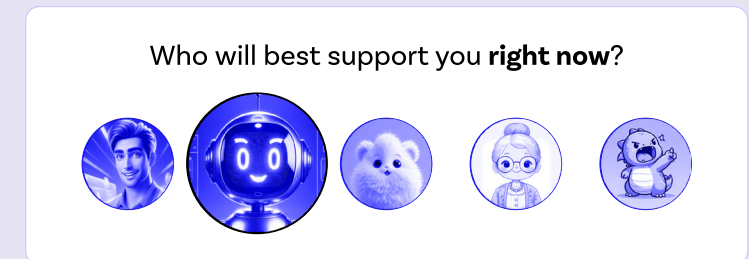
LEARNING AND ADAPTATION

Initially, students manually set their focus preferences, which helps train the AI on their habits and needs. Over time, the AI learns to anticipate and adapt to the student's requirements, enhancing the personalization and responsiveness of the learning environment

Selecting the desired focus mode can function as a ritual to get in the right zone for the task.



Change the AI character when you transition between tasks to get a different type of support



4:3 Context selection

SMART SELECT

This concept aims to break free from the typical workflow of switching between apps and AI chat interfaces. It integrates the power of AI directly into the context in which it is used, enhancing efficiency and convenience.

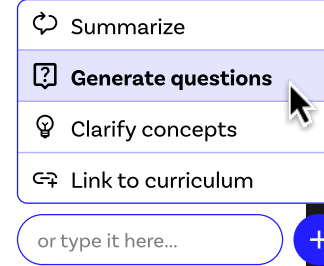
AI VISION

By utilizing the visual capabilities of AI and allowing it to read the screen, this approach provides better context for the AI. This makes it easier to support students with specific queries, offering more precise and relevant assistance through the actionable menu.

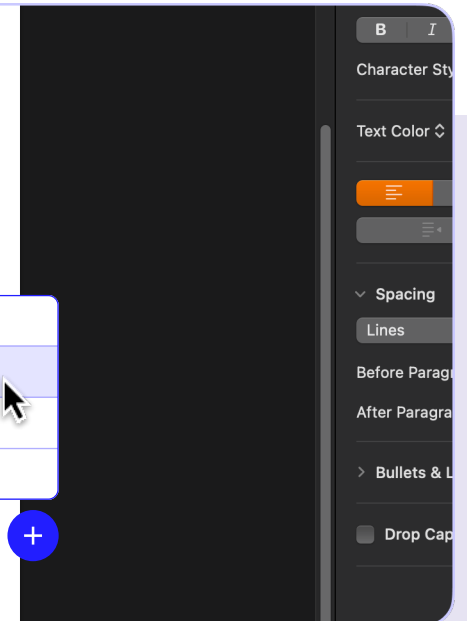
Selecting a piece of text in Pages, triggering the AI to display some relevant actions.

ogy, such as remote sensing and GIS, can greatly aid in monitoring biodiversity
essing conservation efforts. Collaborations between scientists, policymakers,
nologists are crucial in harnessing these tools effectively.
ging local community involvement in conservation initiatives can foster a sense
rship and responsibility, leading to more sustainable outcomes.

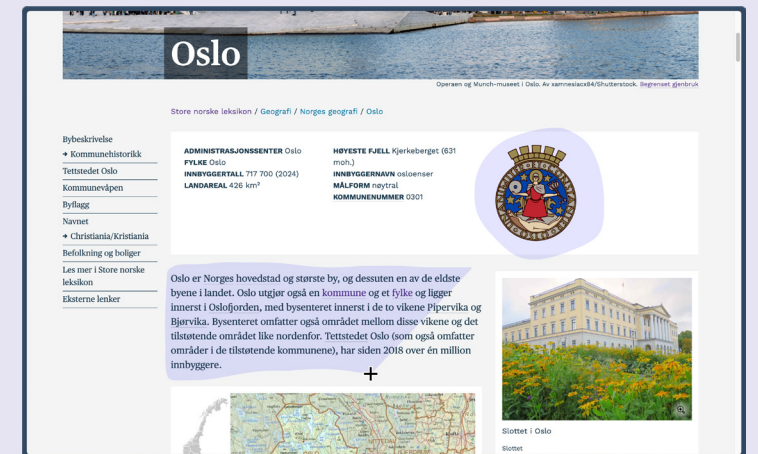
sity conservation is not merely an ethical imperative but a practical necessity
ring the long-term health and resilience of our planet. By implementing
conservation strategies and fostering a deeper appreciation for nature, we
guard biodiversity for future generations.



A context menu overlay with a white background and a blue border. It contains four items: 'Summarize' with a circular arrow icon, 'Generate questions' with a question mark icon, 'Clarify concepts' with a lightbulb icon, and 'Link to curriculum' with a chain link icon. Below these items is a text input field with the placeholder 'or type it here...' and a blue plus sign button to its right.



Context selection could have a free form, work for anything that the screen displays, and support multiple selections simultaneously



4:4 Quick actions

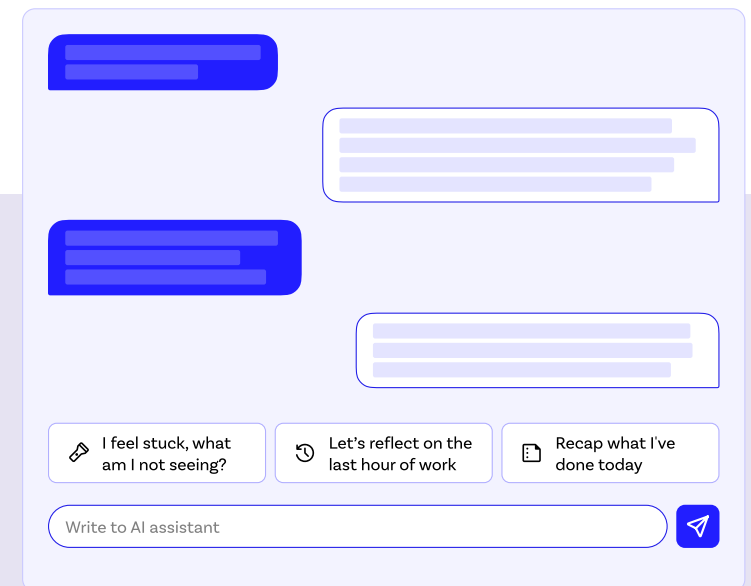
QUICK ACTIONS

A great feature of conversational AI is its limitless potential for user queries, but this can sometimes be overwhelming or paralyzing. It can be difficult to know what kind of support you need, so quick actions aim at helping students by providing prompts to inspire and guide them.

DYNAMIC AND RELEVANT

These actions can change based on the AI's observations, ensuring that the suggestions remain relevant and useful to the student's current needs. However, there is a need to carefully balance what the AI suggests to avoid leading students in undesirable directions. This reflects the power and responsibility of the AI in guiding student actions effectively and ethically.

Quick actions can guide the student through slow patches, prompt them for some self-reflection, and provide a summary of their latest effort.



5 Insight & reflection

Utilizing AI's data analysis capabilities to offer students insights into their study habits and a way to reflect on their strengths and challenges.

5:1 AI's notebook

DAILY FEEDBACK

Similar to the Replika AI mentioned in the research, the AI documents each study session in notes that students can review. By observing the student's habits, efforts, and progress, the AI develops an understanding of their preferences, effective strategies, and areas of struggle. These insights are captured as concise reflections in the AI tutor's notebook.

PERSONALIZED DELIVERY

The tone of voice for these entries can be customized to suit each student's preferences, making the feedback more personal and engaging. These notes can serve as a starting point for more in-depth feedback sessions between the student and the AI.

How do I want my feedback to be **delivered**? Do I take the feedback of AI **seriously**? Do I **trust** its opinions?

Questions the student might reflect on when interacting with this feature.

The image displays two side-by-side screenshots of a 'TUTOR NOTEBOOK' interface. Each notebook has a search bar and three entries. The first entry is 'Enhanced argumentation', the second is 'Update your references', and the third is 'Data layers'. The text of these entries is identical in both screenshots, but the tone of the feedback is different. Below the screenshots are two 'HUMOR' sliders. The first slider is labeled 'Sincere' and is positioned towards the 'Serious' end of the scale. The second slider is labeled 'Sarcastic' and is positioned towards the 'Sarcastic' end of the scale.

This example shows the same content written in with two different humor settings, one sincere and the other one in a sarcastic tone of voice.

5:2 Wrapped

YOUR STUDY SUMMARIZED

The AI provides students with reports and insights on their academic progress focusing on flow states, what made them focused, comfortable and relaxed while studying. The review can be scheduled at intervals they select, whether daily, weekly, or based on specific events like after deliveries or at the end of a semester. The

HIDDEN PATTERNS

These insights highlight areas of improvement and challenges, and reveal patterns that might not seem clear without the AI's insight and analysis tools. This includes identifying optimal study environments, peak productivity times, best methods for flow, fun, and more creative periods, as well as which study locations are most enjoyable.

Do we want to be **observed** and **analyzed** for the sake of learning about ourselves?

A question I am asking myself at the end of this diploma project.

Wrappet could be done for each student, or for whole classes to create a social element to overall study well-being

PSYCHOLOGY
SUMMARY

TRENDS

- First year students break down their tasks more than others
- Study buddies get better together faster
- Most productive study spot is the blue room on 5th floor

TOP STUDY SPOTS

Hi Hanne! [Share](#)

SUMMARY

TOP METHODDS

- Brainstorming a couple of times a week is giving you a boost in creativity
- You seem more focused and relaxed when you do your pre lecture sessions

TOP STUDY SPOT

- Library
- Campus
- Home

TOP STUDY BUDDIES

- Mary
- Ronnie
- Ali

WEEKLY SUMMARY

450 minutes **12** breaks **70%** in the flow

INSIGHTS:

- You had some great sessions after the Educational Theory lectures this week. Let's keep doing those.
- Your focus tends to dip after lunch. Let's introduce more creative tasks post-lunch to capitalize on any bursts of spontaneous energy.
- The library seemed like a good place for writing this week.
- The study group session with Myke gave you a boost in productivity.

[+ Add note](#)

Expert feedback

I presented the a summary of the research and the final UI concepts to three experts, each specializing in different aspects relevant to the project.

DIEGO MARÍN

In our talk, Marín reflected on how the project strengthens humanness, as he noted that making studying more comfortable and efficient, allows for more free time. The UI sketches about AI personality sparked his curiosity about making the AI stricter with its availability times.

Dancer and AI researcher at the University of Oslo

ERIK WINERÖ

Winerö reviewed parts of the report before delivery and appreciated the project's balance between human autonomy and machine automation. He highlighted that what we think we need to learn and what actually helps us learn better often differ. His main message was that we need to face challenges to learn, reminding me that my learning from this project wouldn't have occurred if AI had done the whole project for me.

Teacher and PhD student in Educational Science at the University of Gothenburg

Interaction designer and AI expert

MATT JONES

Matt Jones posed questions about user behavior differences between a locally running tool and a service where data is stored on company servers. He highlighted how users might act differently when their data is fully private versus not in their control. He suggested that with today's technology, such an AI tool could run on students' local laptops, potentially making privacy a non-issue.

Jones recognized the value in goal setting and task management but questioned the necessity of selecting an AI character with personality before understanding the tool's value, even questioning the need for a personality at all for this use-case.

He reflected on the tool's agency, debating whether the AI should merely suggest actions or actively orchestrate the student's life, like signing them up for courses or booking appointments.

Lastly, Jones suggested embedding AI into the interface more deeply, moving beyond chatbots. He emphasized that the output might be more interesting if the input isn't a text prompt and encouraged making full use of the desktop and UI freedom.

05

BACK MATTER

This chapter is for reflections, acknowledgements and references

Reflections

In writing this report, I reflect on what I have learned about the topics I researched, the design process in general and my experience during this diploma.

THE GOALS IN RETROSPECT

One of the goals for this project was to learn more about the history of artificial intelligence, understand in what forms it exists today and consider and reflect on its future iterations and applications. After testing different AI applications, watching videos by the world's top AI experts, and engaging in daily philosophical conversations with peers, I can confidently say my knowledge of AI has deepened significantly. I have confirmed for myself that my primary interest lies in how humans interact with AI rather than the technical aspects, which is evident in this project.

REWIND AND REDO?

I can't help but wonder how the project would have turned out had I started with a much more specific scope. There will be more opportunities to work with the human-AI relationship in future projects, and I will appreciate the broad and thorough knowledge base I have started building for myself through this diploma.

DEALING WITH POSSIBILITIES

A possibility-driven and explorative project like this was challenging, as the aim was to explore potential possibilities rather than setting a goal or defining a clear problem to solve from the beginning. The road got paved as I walked, and making decisions about what direction to move in seems obvious looking back, still knowing that it felt clueless and chaotic in the moment.

MY RELATIONSHIP WITH AI

The last five months have been intensely focused on AI technology and future speculation. I can truthfully say that I am looking forward to giving the existential part of my brain a break

I also want to acknowledge that using AI daily throughout this project has made me reflect on my own reliance on the tool and to be more mindful about when and how I use it.

MY ROLE AS A DESIGNER

I started out by saying that my role as a designer in this project was to be optimistic and critical, and I hope you as a reader of this report can see how my view on AI is not all rose-colored. I am fascinated by the huge changes we have started to witness, and I am curious to see what the future holds.

A heartfelt thank you to

my supervisor, Mosse Sjaastad for her invaluable guidance through this project, unlike any AI I have ever talked to.

my family for their continuous support throughout these many years of education.

my lively classmates who have made this period unique and memorable.

Now awaits new adventures!

References & resources

A. E. (2023, November 3). *Climbing the Ladder of Abstraction: Amelia Wattenberger*. YouTube. https://www.youtube.com/watch?v=PAy_GHUAICw

Anthropomorphism. (2024, April 12). Wikipedia. <https://en.wikipedia.org/wiki/Anthropomorphism>

Ellsberg, M. (2024, January 30). *The Battle of the AI Therapists*. Michael Ellsberg's Missives. <https://www.michaelellsberg.com/p/battle-of-the-ai-therapists>

Fossheim, Hallvard: *Aristoteles i Store norske leksikon på snl.no*. Hentet 16. mai 2024 fra <https://snl.no/Aristoteles>

From fear to Utopia: A vision of AI's positive potential. (2024, March 11). <https://www.performancemarketingworld.com/article/1863612/fear-utopia-vision-ais-positive-potential>

G. M. T. (2023, June 30). *The Genius AI Behind The Sims*. YouTube. <https://www.youtube.com/watch?v=9gf2MT-IOsg>

L. F. (2024, March 7). *Yann Lecun: Meta AI, Open Source, Limits of LLMs, AGI & the Future of AI | Lex Fridman Podcast #416*. YouTube. <https://www.youtube.com/watch?v=5t1vTLU7s40>

Maples, B., Cerit, M., Vishwanath, A., & Pea, R. (2024, January 22). *Loneliness and suicide mitigation for students using GPT3-enabled chatbots*. *Npj Mental Health Research*. <https://doi.org/10.1038/s44184-023-00047-6>

Maslow's hierarchy of needs. (2024, May 9). Wikipedia. https://en.wikipedia.org/wiki/Maslow%27s_hierarchy_of_needs

N. (2024, January 17). *Seks av ti lærere sier de har tatt elever i KI-juks*. NRK. <https://www.nrk.no/nyheter/seks-av-ti-laerere-sier-de-har-tatt-elever-i-ki-juks-1.16720295>

Pierce, D. (2024, May 2). *Rabbit R1 review: an unfinished, unhelpful AI gadget*. *The Verge*. <https://www.theverge.com/2024/5/2/24147159/rabbit-r1-review-ai-gadget>

Porter, J. (2023, November 6). *ChatGPT continues to be one of the fastest-growing services ever*. *The Verge*. <https://www.theverge.com/2023/11/6/23948386/chatgpt-active-user-count-openai-developer-conference>

Q. (2017, July 21). *The story of Replika, the AI app that becomes you*. YouTube. <https://www.youtube.com/watch?v=yQGqMVuAk04>

Strümke, I. (2023), *Maskiner som tenker*. Kagge Forlag.

Tarnoff, B. (2023, September 1). *Weizenbaum's nightmares: how the inventor of the first chatbot turned against AI*. *The Guardian*. <https://www.theguardian.com/technology/2023/jul/25/joseph-weizenbaum-inventor-eliza-chatbot-turned-against-artificial-intelligence-ai>

Ter-Grigoryan, H. (2022, July 13). *5 Quintessential Qualities of a Good Tutor - LiveBoard - Medium*. Medium. <https://medium.com/liveboard/5-quintessential-qualities-of-a-good-tutor-8845e0b99dd8>

Tre studenter tatt for juks med KI på NTNU: Slik ble de avslørt. (2023, November 6). *Digi.no*. <https://www.digi.no/artikler/tre-studenter-tatt-for-juks-med-ki-pa-ntnu-slik-ble-de-avslort/539312>

T. T. (2023, December 1). *Cheating or Learning? Walking the AI tightrope in education | Erik Winerö | TEDxGöteborg*. YouTube. <https://www.youtube.com/watch?v=mEtAfbFr6RE>

Wattenberger, A. (n.d.). *Putting knowledge in its place*. <https://wattenberger.com/thoughts/this-is-not-a-rant-about-chatbots>