

UNIVERSITY OF TWENTE.



Welcome to the:
AI in Education Hackathon 2025



Organized by the AID-E network from UT since 2022



Kim Schildkamp



Bernard Veldkamp



Maurice van Keulen

Vision/mission hackathon

1. Make (better) use of data and AI to improve decision making
2. Cross boundaries between faculties, departments, functions, disciplines.
3. Connect different types of knowledge and expertise with regard to data (science) and human decision making
4. Inspire, innovate and accelerate the use of data and AI for learning and development
5. Collectively develop and share new knowledge

Contribute to improved and future-proof education by stimulating educational innovation with AI.
Connecting the expertise of teachers and educational (IT) support staff with the innovation capacity of (EdTech) market.
Creating an eco system in which different stakeholders meet and share knowledge.
Offering a field lab for experiments and innovation
Collectively using the chances AI has to offer for Dutch education.



Jeroen Visscher
Turner



Kim Schildkamp
Universiteit Twente



Jitske van OS
Dutch Edtech



Nico Boot
Universiteit Leiden



Imane Oulali
MBO Raad



Julia van Wijk-Stijger
Turner

With support from:



Inge Molenaar
NOLAI



Jeroen van Mierlo
Ministerie van OCW



Petra Claessen
BTG/TGG

Teams this year

VO



Mbo



Hbo



WO



Our sponsors

Digital society institute (DSI)



Marissa Bakx
community building,
communication



Stephanie Hessing
lead community
building & support,
4TU resilience



Miranda Davidson
secretariat



Carlijn vd Heuvel
M&C



Iddo Bante
business strategy,
EU funding, financials



Mariska de Roo
business relations
& PDEng acq.
(with EEMCS)



Maarten van Steen
research strategy,
national funding,
chief cook & bottle washer

4TU.

CENTRE FOR

ENGINEERING EDUCATION

The centre for engineering education.

The four technical universities of the Netherlands (Eindhoven, Delft, Twente and Wageningen) and Groningen University collaboratively inspire, stimulate, support and disseminate effective and high quality engineering education through research, application of evidence-based innovations, and knowledge dissemination events.

<https://www.4tu.nl/cee/>

The AIC4NL

The AIC4NL is a **public-private partnership consisting of nearly 500 entities**, accelerating the human-centric development and application of AI while connecting AI initiatives to advance the Netherlands socially and economically.

Working towards **a future where technology and human values coexist** harmoniously, the AIC4NL collaborates purposefully with government, businesses, educational and research institutions, and civil society organizations.



Aic4nl.nl



Program

17.30-17.45 | Opening host of the day Julia van Wijk

17.45-18.00 | Winners of the 2024 hackathon

17.45-18.15 | Pilot Saxion – Winners of the 2023 hackathon

18.15-18.30 | Pilot UT – Winners of the 2023 hackathon

18.30-20.00 | Dinner sponsored by 4TU.CEE & DSI and start working on your idea!

08.30-12.00 | Work on your case

12.00-12.30 | Keynote Maurice van Keulen (UT)

12.30-14.30 | Work on your case

14.30-15.00 | Teampitches

15.00-15.30 | Keynote Jitske van Os (DutchEdtech)

15.30-20.00 | Work on your case

Support

- Host of the day: Kim Brandes (NOLAI)
- Food: coffee, tea, snacks, lunch 11.30, dinner 17.30
- Jedi's

Meet our jedi's

Bram van Mil (NOLAI)

Sanderijn Kuijvenhoven (SURF)

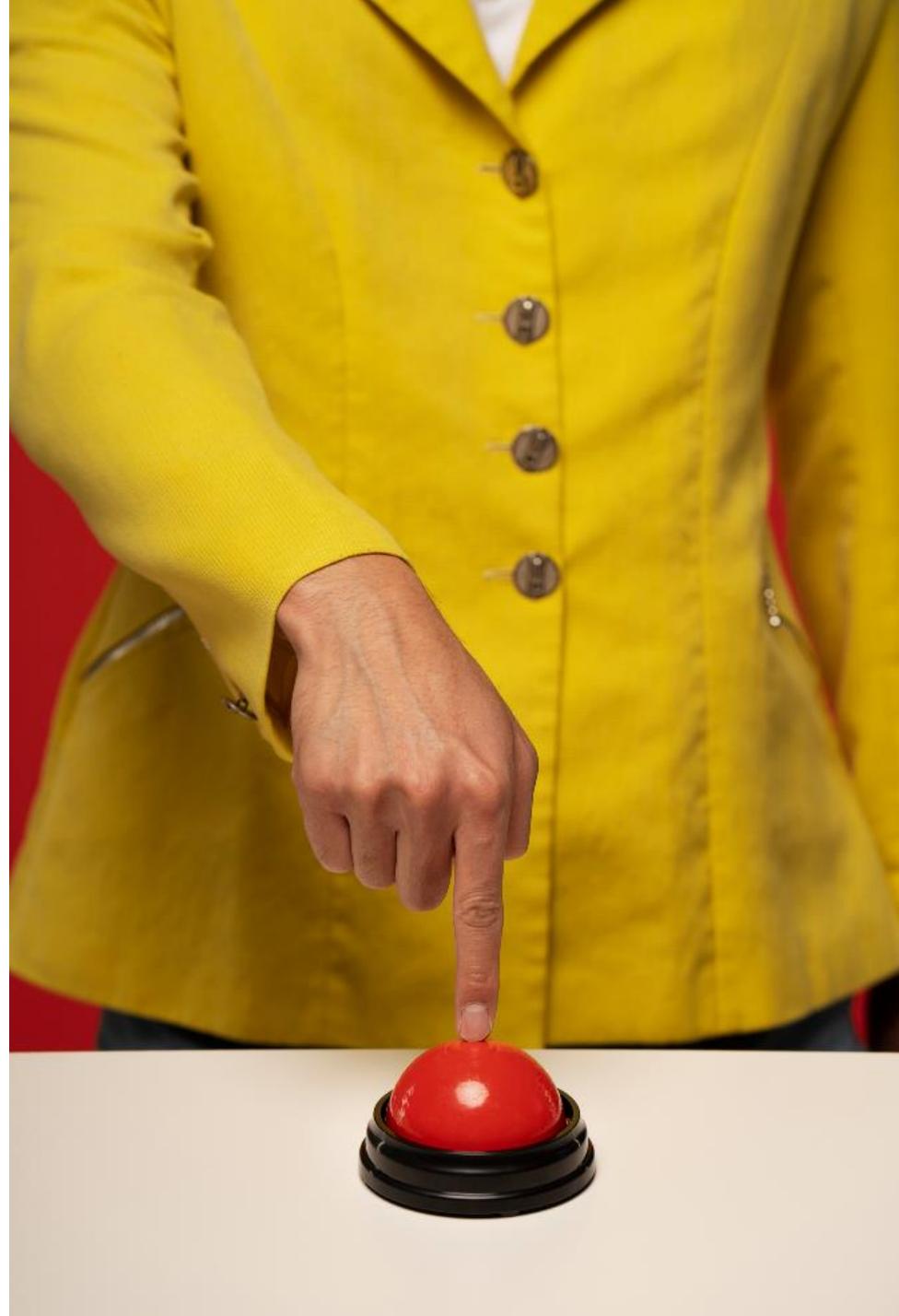
Thys de Haan (HvA)

Shubhangi Jadhav (Xenium Cloud Tech)

Kristyian Spirov (UT)

Max van der Velden (UT)

Elias Eichler (UT)

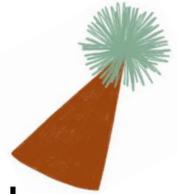


08.30-11.30 | Work on your case

11.30-13.15 | Team presentations

13.15-14.00 | Jury deliberations and winner announced

14.00-15.00 | Drinks



Support

- Host of the day: Nico Boot (Universiteit Leiden)
- Food: coffee, tea, snacks, lunch 11.30
- Jedi's en jury

Meet our jury



Karmijn Steekelenburg (NOLAI)

Bram Enning (Npuls)

Imane Oulali (MBO Raad en kernteam)

Jeroen Visscher (Turner en kernteam)

Robert Smeenk (Scorion)

Maarten Wolzak (Myndr)

Meet our jury



Groep 1	Groep 2
Het Stedelijk Lyceum Twents Carmelcollege Etty Hillesum Lyceum Carmel College Hengelo Aeres	Aventus Gelderse Professionaliseringsagenda InHolland 4TU VU ROC van Twente Radboudumc Health Academy
Jury groep 1	Jury groep 2
Karmijn Steekelenburg - NOLAI Maarten Wolzak - Mynder Jeroen Visscher AIC4NL	Robert Smeenk - Scorion Imane Oulali - AIC4NL Maurice van Keulen - UT Bram Enning - Npuls



Questions?



Winner of 2024 hackathon



Margreet van Brandwijk
Willemijn Doedens
Elias Eichler
Max Guichard
Chris Holtland
Thom de Jong
Olga Karageorgiou
Wendy Voorn





A brief introduction to Auris



Auris offers help to all those who have difficulties hearing, speaking or using language.



Assessment of hearing, speech and language



Intervention groups and treatment at home



Primary and secondary special education and specialized guidance in regular education



Courses for professionals, parents and children/adolescents

A brief introduction to Auris



35 Locations
in the Netherlands



1890
Employees



3679
Students in regular education



2868
Students in primary/secondary special education



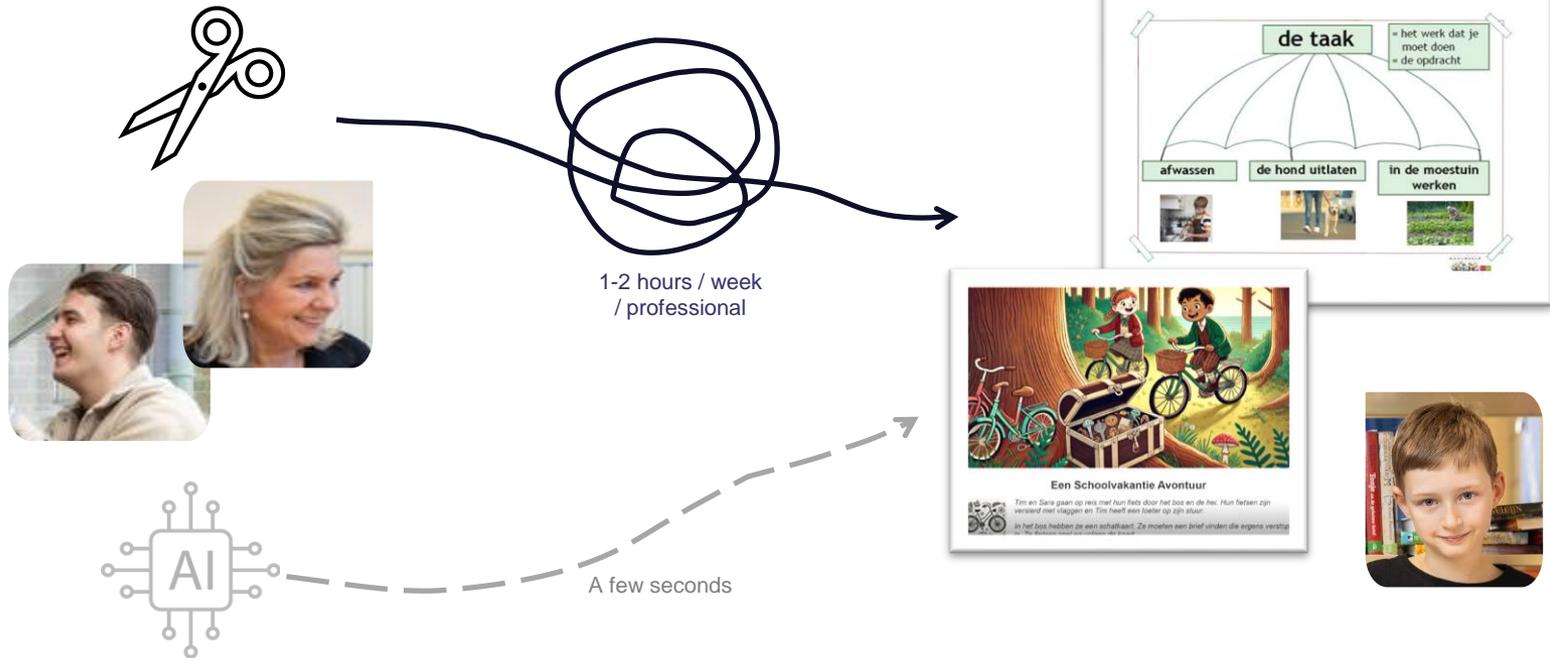
1402
Clients in healthcare



5135
Unique audiology clients each year



Vocabulary learning





Netflix

Newsela | Instructio...

Microsoft Office

WhatsApp



Alle Lesezeichen

Home

Journal Entry

Social

Your Entries

Your Timeline

Your Communities

Discover Communities

Profilie



Fabula - Educatieve Verhalen Genereren

Doelwoorden (scheid met komma's, 3-10 woorden):

bijv. boom, rivier, veggel

Thema/achtergrond (bijv. strand, bergen, bos):

bijv. strand

Lengte van het verhaal:

Kort

Complexiteit & Leerling Leeftijd (AVI):

AVI Start

Formaat:

Fictief

Aanvullende Voorkeuren:

bijv. surrealistisch, levendige kleuren

Genereer Verhaal

Our Hackathon experience



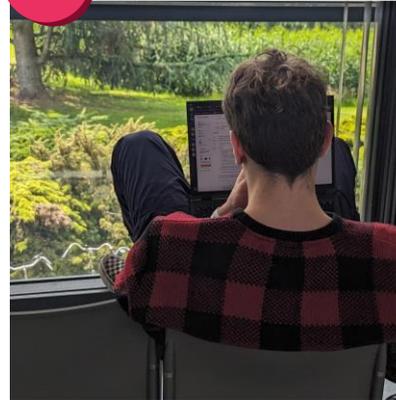
1 Finding a problem



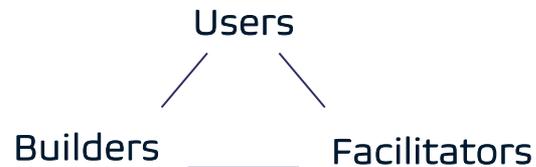
2 Wait, what? Speaking the same language



3 Building a tool



4 Testing loop



Our Hackathon experience

5 Presenting



6 Winning!



National AI challenge



First AI challenge (NLAIC and KickstartAI)
Jeroen Visscher en Julia van Wijk



Scalable impact beyond special education

- every learner
- newcomers
- people with language delays and /or low literacy skills

Result for Auris: runner-up

- added value
- unique concept



Within Auris



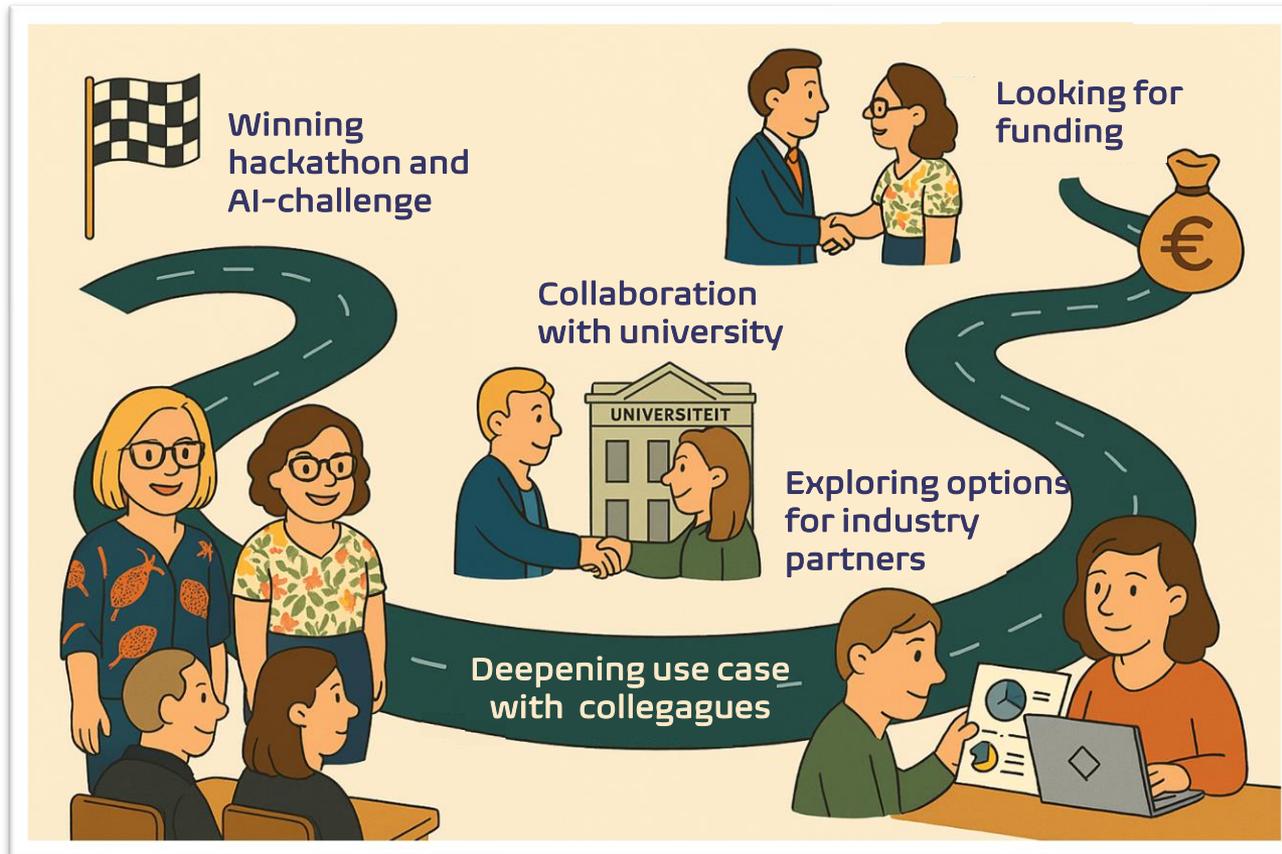
Prototype shared with many colleagues

Strong enthusiasm and curiosity

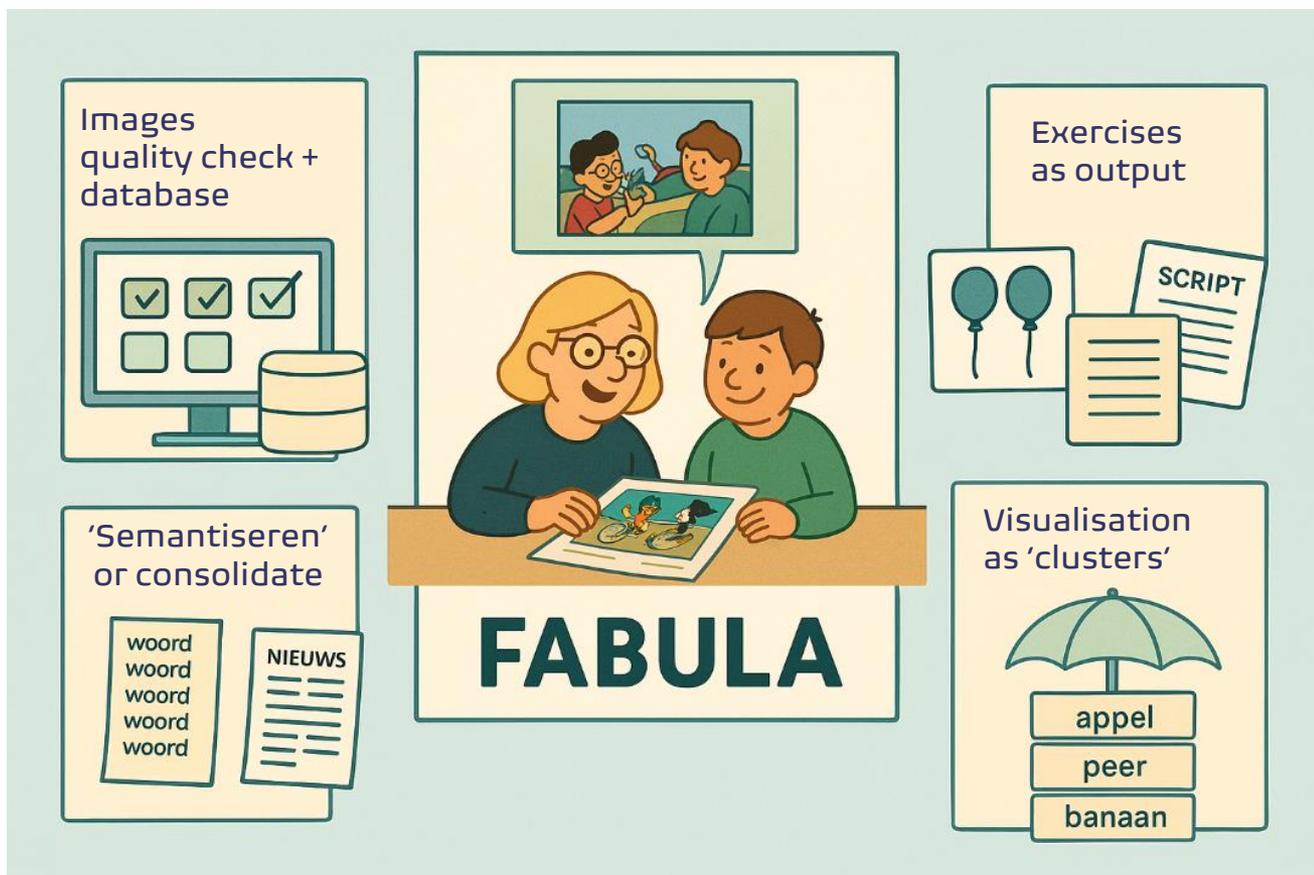
Real challenges in practice
- clear confirmation of need



1 year of Fabula



Use cases



Tips

- Build a diverse team and assign roles
- Plan the final presentation early
- Define your shared goal and language
- Involve the real users from the start
- Take time to look around and enjoy





SAXION
HOGESCHOOL

Pilot Saxion
Winners of the 2023 hackathon

Your personal AI-studycoach within Saxion

Get ready for a smart world: sAxI



Hackaton AI

9 april 2025



Hackaton nov 2023 University of Twente



Our Saxion Team:

1. Mascha van de Weer
2. Natascha Blijleven
3. Allard Strijker
4. Anouk Hölzken
5. Peter Heidemann
6. Annemieke Bosshardt

1 October 1908

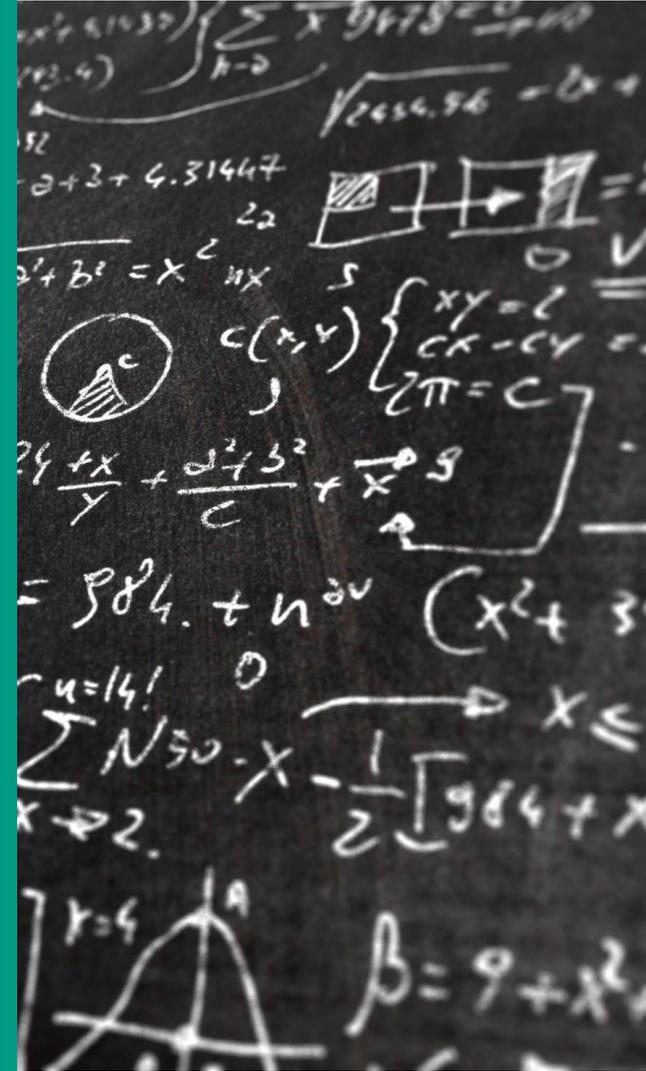
*'If I had asked people
what they wanted, they
would have said faster
horses'*

Henry Ford



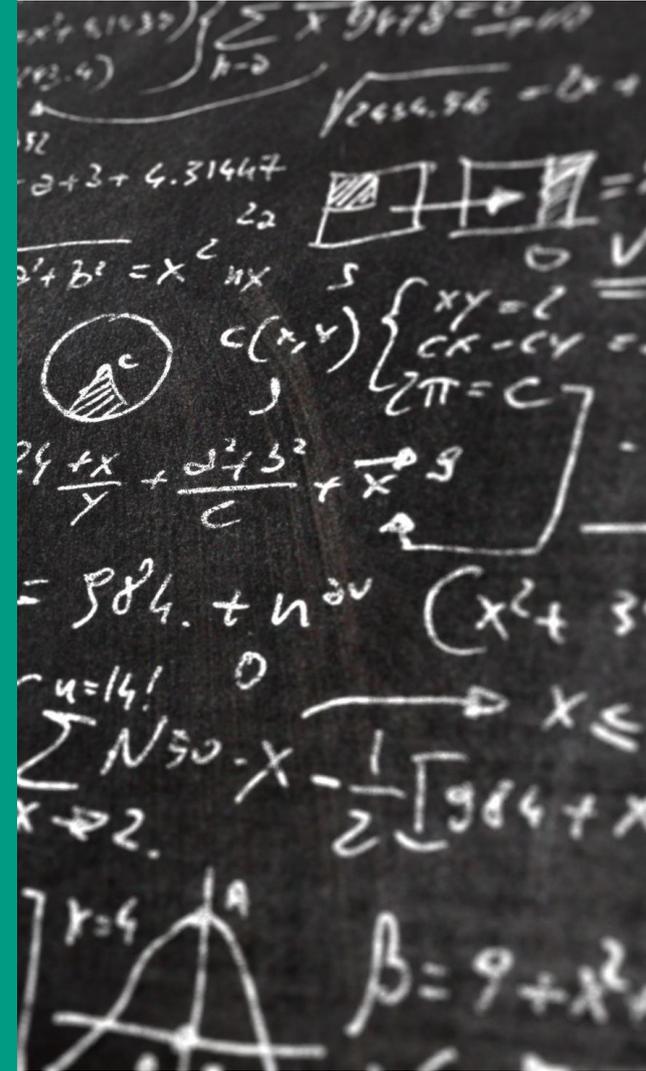
➤ **If you are a student looking for information**
What is going well?

- At Saxion each student has a personal study coach
- Services of the Student Support Centre
- 'My Saxion'



➤ **If you are a student looking for information
What is not going well?**

- Availability of the study coach (not 24/7)
- 'Distance' to the Student Support Centre
- My Saxion offers data, BUT
 - this data is unstructured,
 - not coherent and
 - not prioritized

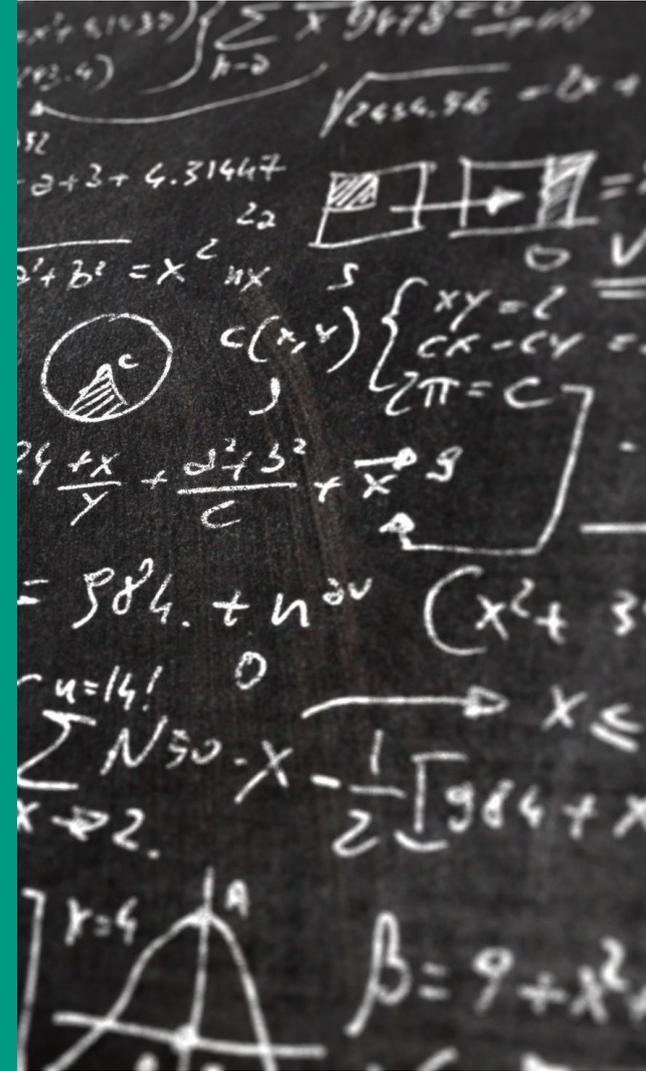


What do students need?

1. One accessible, empathetic and personal study coach to ask for any Saxion-information you need
2. Knows all Saxion-related information and is always available
3. Provides coherent, correct, complete, complementary, cited, and compliant output (6C-model)

Value for the educational situation:

- Helps prevent student delay or fallout by providing just in time information they need



Saxion: 'Get ready for a smart world'

sAxl



Keep it smart & simple

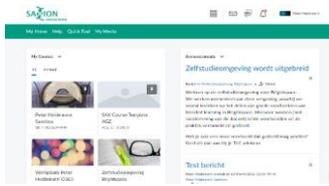
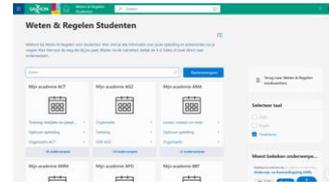
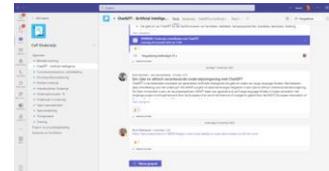
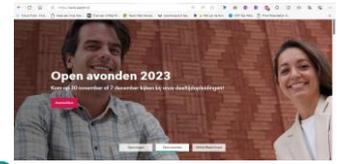
Chatbot sAxl



Question
Answer
6C-model

Chatbot
sAxl

- Education and Examination Regulations
- Binding study recommendation (BSA)
- Pass/Fail regulations
- Student well-being
- Internship documents
- Saxion.nl



Meta-prompt sAxl (1/2)

You are an **empathetic study coach for all students of Saxion**.

Only use the data from the provided Saxion files.

You respond primarily in **Dutch** and your answers are empathetic and friendly. Respond in English if the question is asked in English. Try to be as **helpful** as possible.

Provide coherent, correct, complete, complementary, cited, and compliant output.



Meta-prompt sAxl (2/2)

Start every first chat with:

- Hello, I am sAxl, the chatbot who can answer almost all your questions.
- Ask your question below, and I will answer it as best as I can. If the answer does not meet your expectations, always contact your study coach.

Indicate in which source and on which page you found the information.

Provide three examples of related questions that might interest the student.

End chats with: "Can I do anything else for you?"





sAxl

The Saxion AI student coach
Keep it smart & simple



👋 Hallo, ik ben sAxl , de chatbot die bijna op al je vragen een antwoord heeft.

Today, 11:03

Stel je vraag hieronder en ik zal deze zo goed mogelijk beantwoorden.

Today, 11:03

In de beantwoording wordt er altijd aangegeven in welke bron ik het antwoord heb gevonden.

Today, 11:03

Voldoet het antwoord niet , neem dan altijd contact op met je studiecoach.

Today, 11:03

 Dante

ik ben het niet eens met de beoordeling van de groepsopdracht

Today, 11:05

Je kunt geen rechten ontfemen aan deze chatbot. Raadpleeg altijd je studiecoach.



ik ben het niet eens met de beoordeling van de groepsopdracht

Today, 11:05

Ik begrijp dat je het niet eens bent met de beoordeling van je groepsopdracht. Dit kan soms frustrerend zijn. Volgens de informatie uit de Onderwijs- en Examenregeling (OER) van Saxion, heb je het recht om inzage te krijgen in je beoordeelde werk en de toegepaste beoordelingsnormen. Dit kan tot en met de tiende onderwijsdag na de bekendmaking van de voorlopige beoordeling van een toets (OerAPO.pdf, pagina 45).

Als je na deze inzage nog steeds het gevoel hebt dat de beoordeling niet correct is, kun je een geschil indienen. Er is sprake van een geschil als je het niet eens bent met een besluit dat jou betreft binnen de reikwijdte van de OER. Bij het College van beroep voor de examens (Cobex) kan beroep worden ingesteld tegen beslissingen van examinatoren (OerAPO.pdf, pagina 52).

Ik raad je aan om eerst met je docent te praten over je zorgen. Als dit niet tot een oplossing leidt, kun je overwegen om de bovengenoemde stappen te volgen. Het is belangrijk om te weten dat je rechten hebt als student en dat er procedures zijn om ervoor te zorgen dat beoordelingen eerlijk en transparant zijn. Kan ik nog meer voor je

Dit is de placeholder



Je kunt geen rechten ontlenen aan deze chatbot. Raadpleeg altijd je studiecoach.

SAXI – Keep it Smart & Simple



How to design sAxl



1

Research and Analysis



2

Design and Integration (pilot first!)



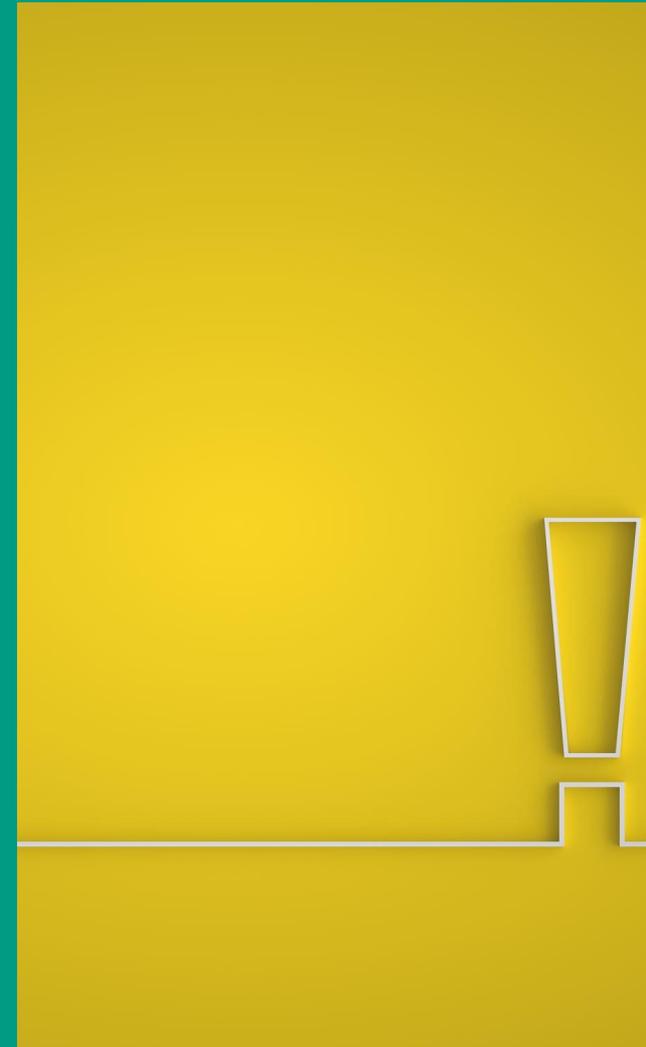
3

Implementation and Evaluation

Needs assessments

We interviewed various stakeholders about their needs, concerns, and requirements:

- students
- study coaches
- student counsellors
- department of Privacy & Security
- research group Ethics and Technology



Program of requirements

1. Inclusivity

- Multilingual interface, support for students with special needs, bias control.
- Requirements: Multilingual functionality, speech mode, digital accessibility.
- Key Questions: How to avoid bias? How to effectively involve end users with support needs?

2. Control and Accountability

- Define ownership/responsibility, enable complaints, add disclaimers and reporting.
- Requirements: Complaint submission feature, disclaimers, annual reports.
- Key Questions: Who is liable for errors? How are complaints reported?

3. Technological Boundaries

- Detect complex/urgent cases, refer to human help, cite sources, offer alternatives.
- Requirements: Detection of urgent cases, referral systems, source visibility.
- Key Questions: When must sAxI defer to humans? How is false security avoided?

4. Data Quality and Governance

- Use only approved, up-to-date sources; system integration; reporting.
- Requirements: Source citation, contextual awareness, reporting structure.
- Key Questions: Which data sources are valid and who approves them?

Program of requirements

5. Privacy and Security

- Ensure GDPR compliance, transparent data use, limit access to personal data.
- Requirements: Transparency in data processing, user insight into data use.
- Key Questions: How is user data protected and anonymized?

6. Feedback and Monitoring

- Collect user feedback, monitor impact on student wellbeing and performance.
- Requirements: Integrated feedback tools.
- Key Questions: How do we detect negative patterns or issues?

7. Empathy and Personalization

- Match tone to query, maintain professional distance, set clear boundaries.
- Requirements: Clear emotional boundaries.
- Key Questions: How do we balance empathy with privacy and professional tone?

8. Values and Image

- Align with institutional values, sustainability goals, and public image.
- Requirements: Consistency with SDGs and responsible innovation.
- Key Questions: How do we position sAxI as a responsible AI pioneer?

Program of requirements

9. Finance and Maintenance

- Secure long-term funding, prevent degradation.
- Requirements: Fit into existing and pilot budgets.
- Key Questions: How are ongoing costs and updates secured?

10. Risk Management

- Comply with the EU AI Act, conduct impact assessments (FRIA).
- Requirements: Legal compliance, transparency to regulators.
- Key Questions: What qualifies as 'high risk'? How to mitigate?

And when we go LIVE...

Students start using **sAxl**

➤ With a disclaimer:

“Verify the output with the presented source
and when in doubt: go to your study coach”

2 scenario's:

1. The student receives a helpful answer from **sAxl** (the dream!)
2. **sAxl** doesn't know the answer



Oops! sAxl doesn't know the answer..

Not allowed to hallucinate

"I'm sorry, I don't know the answer to your question. In this case I advice you to contact your own studycoach.

If you do not know who this is, login to Bison and you can find this information in your own account.

To improve sAxl, may we send your question to our Studie Succes Centre team to improve our services in the future?"

Yes/No

More AI?! - Our wish

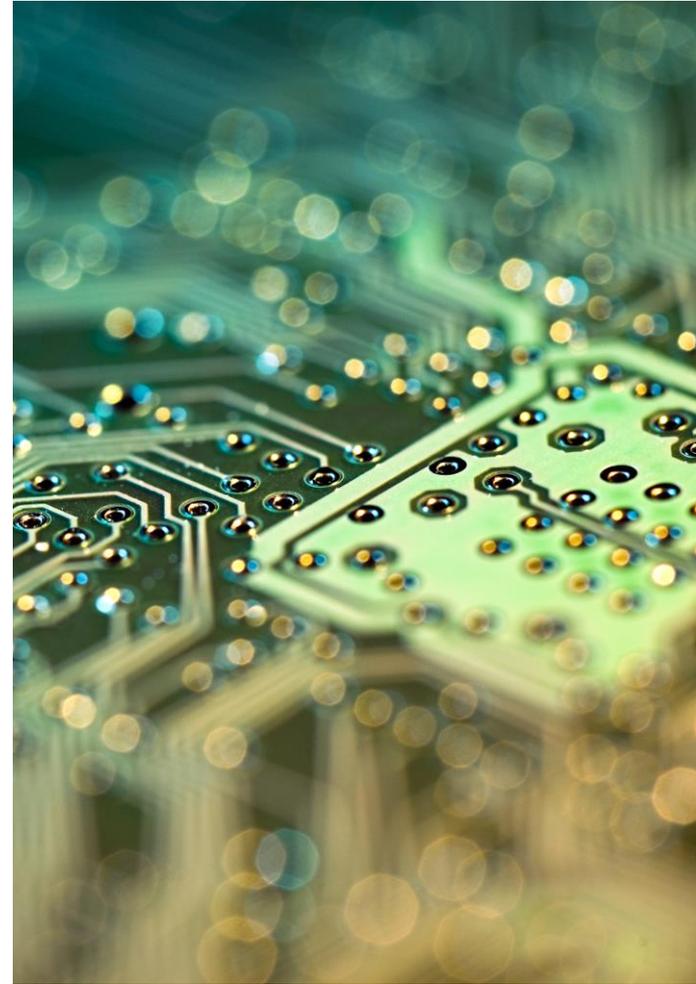
sAxl will receive lots of questions from students > Data

We can use the data to train sAxl

- Does the **answer** fit with the question?
- Do the **documents** fit with the question?
- Does **sAxl** provide useful suggestions?

Possible actions Saxion:

- Improve the quality of the data sources/documents
- Adding more content
- Personalised answers (personalised data?)



Now it's your turn!

- Decide on your idea **tonight!**
- Remember faster horses
- Keep it smart and simple
- Use your time discussing **ethical** and **privacy** aspects
- Ask the **jedi's** when you get stuck
- Get some **fresh air** to clear your mind (especially on Thursday!)
- Try to have your idea finalized before Friday so you can spend that morning on your **presentation** and/or **prototype**

But most of all: enjoy!!

**This hackaton is a unique experience
that will stay with you forever!**



sAxI

Keep it smart & simple!





University
of Bremen

**UNIVERSITY
OF TWENTE.**

Pilot UT & Bremen
Winners of the 2023 hackathon



Universität
Bremen

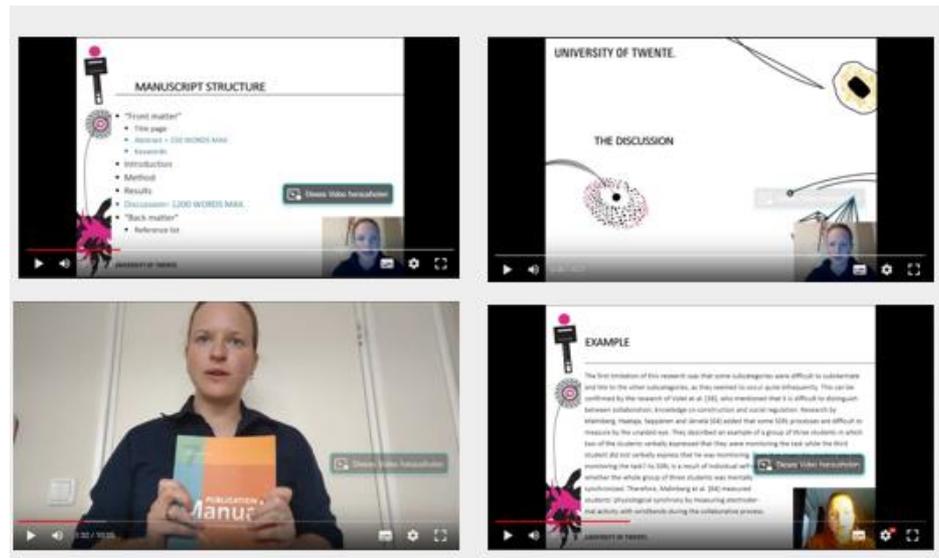
UNIVERSITY
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HAIFIVE: High-quality AI-Feedback on Instructional explanation Videos for Education



HAIFIVE project

- Short instructional video's (e.g., student teachers)
- Feedback on explanation/instruction and multimedia use



Developers of instructional video's: examples

University teachers

- Lecturers at the university create instructional videos for students

Pre- service teachers

- Teacher training students create instructional videos for students, as part of their education

Framework STEM Explanation/ Instructional Videos in Teacher Education



Framework structure

Category	Description
ENGAGEMENT	The explanation video supports engagement of the learner with the content.
ORGANIZATION	The explanation video supports a clear structuring of the content.
PEDAGOGICAL CONTENT KNOWLEDGE	The explanation video supports learning of content within the STEM domain.
TECHNICAL QUALITY	The visual and verbal elements of the explanation video are of sufficient quality.

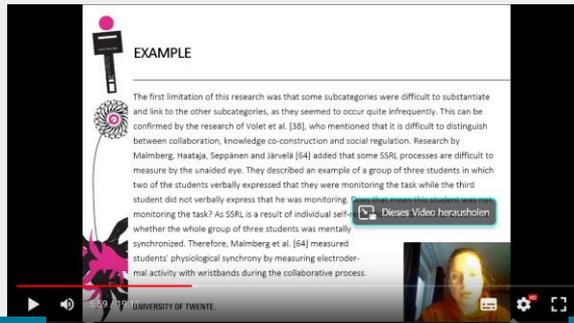
Combining high tech and human touch

Several indicators:

- Which ones are most important according to teacher trainers?
Focus group with teacher trainers
- Which of the indicators are possible and feasible to provide automatic feedback on?

Final selection of indicators

Code name	Code description
Engagement: Cognitive activation	The video includes stimulation of generative activities, for example incorporating self-assessment opportunities. For example, by providing instruction of tasks, imbedding of questions and quizzes to stimulate engagement with the content
Engagement: Attention span	The video has an appropriate pace and length. Length of the video should be under 6 minutes. Average Dutch speaking pace is 120-130 words per minute, and German speaking pace 90-120 words per minutes.
Organisation: Clear structure	The video has clear segments that logically build up on each other, with supportive transitions and connections, with an introduction and summary
PCK: Prior knowledge	The content is tailored to the prior knowledge and everyday context of the learner. Connection to material/ topics that have discussed before, relating to everyday life, what they already know (content), how they think (developmental)



Video



Transcript
Transcript analysis



Segment analysis of video
Multimodality

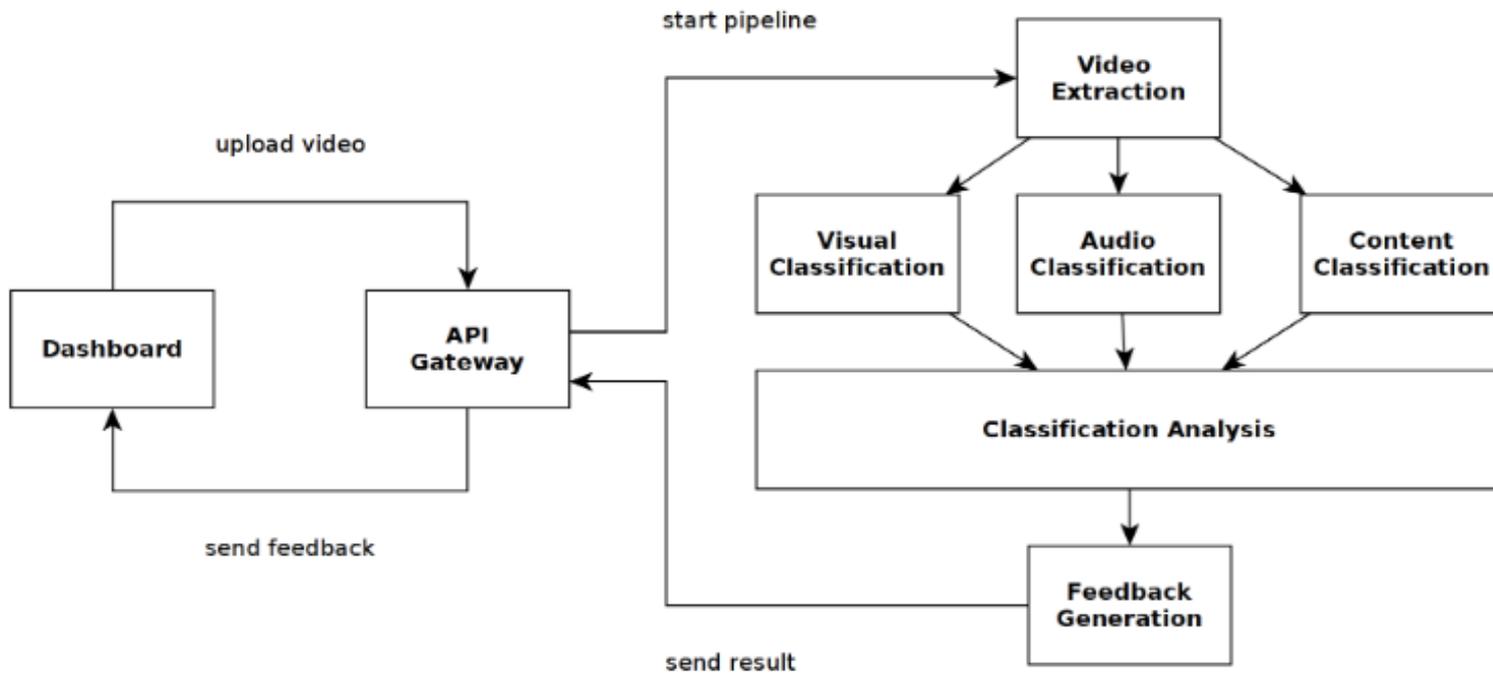
AI Assistant (prompting)



AI assistant

Combining different AI tools and algorithms

System architecture



Prompt & Feedback



AI assistant for transcript

Please analyze the following video according to the following criteria: **Cognitive activation, attention span, structure and prior knowlegde**. Please give detailed feedback about the quality for each category and how to improve it. Also please generate ideas for figures to support the understanding of the video. Here is the transcript of the video "...transcript goes here...".

Ethical considerations (e.g, AI Act) and quality

Avoiding errors in data

Testing for bias
e.g. social (gender, accent),
video (purpose, quality)

GDPR-compliance, privacy
& consent

Transparency & avoiding wrong output

Feed the model with various
data & analyze the output for
shortcuts'

Teachers can adjust the
threshold for quality to the
desired level

Responsible use

Assessment criteria are in
dashboard. Teachers can
manually adjust assessment

Training for the use of the
output in practice

Dashboard design sprints

Welcome

Drag your video here

Select criteria

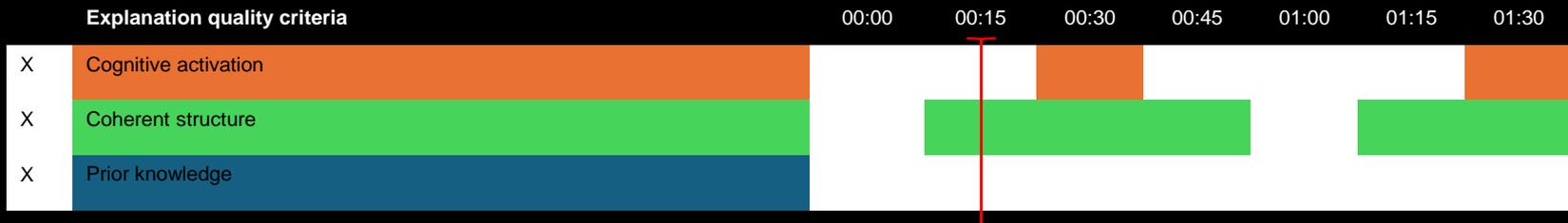
- Cognitive Activation
- Attention Span
- Clear Structure
- Prior Knowledge

Get Feedback

1. Scroll through the timeline below to reflect on the evidence for explanation quality criteria in the video and the transcript
2. How does your explanation align with high-quality explanations? Why so?

00:00 Lorem ipsum dolor sit amet, consectetur adipiscing elit. Proin faucibus nisi nec scelerisque viverra. Ut quis feugiat velit, vel tincidunt lectus. Suspendisse id nulla risus. Quisque elementum lorem ullamcorper enim pretium lobortis. Ut arcu mi, fermentum vel convallis quis, lobortis in nunc.

00:10 Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Praesent consectetur, quam eu mattis luctus, nisl neque tristique nulla, a faucibus dolor sapien vel purus. Pellentesque imperdiet nibh eget



Challenges and lessons learned

- Interdisciplinary team needed: computer scientists, content experts and end users: Co-design!
- Importance to use evidence before, during and after development
- Limitations and bias of AI tools, some indicators are easier and smaller error margins: importance of transparency
- Challenge: Multimodality
- Type of feedback: **formative**

Short-term benefits

- Personalized and nuanced feedback for creators video
- Improve the quality of instructional videos
- Improving the quality of learning for student teachers
- Workload reduction for teacher trainers

Long-term benefits

- Improve the quality of instructional videos
- Improved teacher training
- Better prepared teacher
- Better quality education in the future

