

Empowering Learners in the AI Age

Building Skills for Self-Regulated Learning

Dragan Gašević
@dgasevic

March 25th, 2024
CITE, Faculty of Education
University of Hong Kong

Generative Artificial Intelligence



<https://blog.aare.edu.au/why-you-need-to-spot-the-invisible-elephant/>

The Effects of ChatGPT in Schools and Why It's Getting Banned

Many schools are banning ChatGPT for plagiarism, accuracy and privacy concerns. However, the chatbot could help students and teachers with the right application.

By **April Miller**, Managing Editor of Consumer Technology at ReHack Magazine on June 13, 2023 in **Artificial Intelligence**

Policy decisions about the use of artificial intelligence in schools

Artificial intelligence (AI)

ChatGPT ban in Australia's public schools likely to be overturned

Government reveals a draft framework has been formulated for how ChatGPT rollout will work in schools



Artificial intelligence

Artificial intelligence
will not go away



Source: <https://bit.ly/47NbA7D>



Over 80% of jobs, especially writing and IT, are predicted have at least 19% exposure to generative AI



Productivity in **problem solving support** increased by 35% for novice, but not for experienced workers



46% productivity increase in software engineers while maintaining code quality by using AI



Generative AI does not have inherent mechanisms to **distinguish facts from falsehoods**



National AI

OPINION

Empowering learners for the age of artificial intelligence

Dragan Gasevic and George Siemens

December 10, 2020 – 7.30pm

Gašević, D. & Siemens, G. (2020). Empowering learners for the age of artificial intelligence, <https://bit.ly/smh-empower-ai>

Adaptive learners for the age of AI

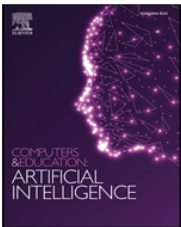
Computers and Education: Artificial Intelligence 4 (2023) 100130



Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Computers and Education: Artificial Intelligence

journal homepage: www.sciencedirect.com/journal/computers-and-education-artificial-intelligence



Empowering learners for the age of artificial intelligence



Gašević, D., Siemens, G., & Sadiq, S. (2023). Empowering learners for the age of artificial intelligence. *Computers and Education: Artificial Intelligence*, 4, 100130.

Critical need

Self-regulated learning (SRL) is
the key skill for adaptive learners

Learning to learn is central to self-regulated learning

Today's talk

Using AI and learning analytics to
enhance self-regulated learning skills

The FLoRA engine

Key takeaway #1

Learning to learn requires
urgent attention

Learners have profound limitations in SRL skills needed in the age of AI

Key takeaway #2

Complex relationship between
self-regulated learning skills and AI

Key takeaway #3

Teachers should play a leading role in designing tasks for lasting impact

FOUNDATIONS – CONCERN – IMPACT –
FINAL REMARKS



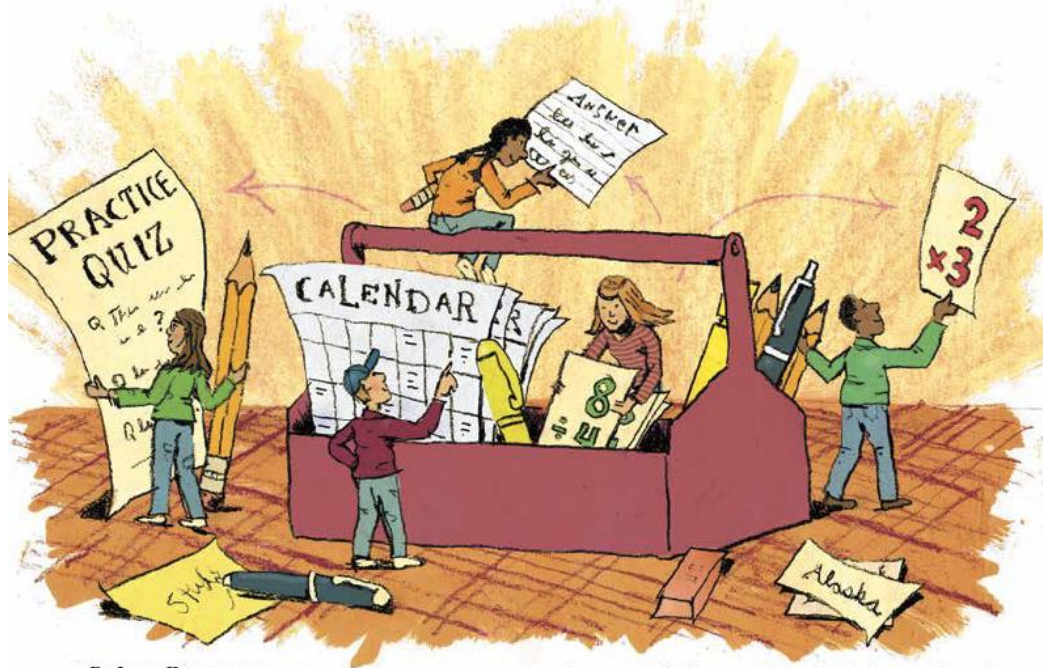


What underpins *learning to learn*?

Learners construct knowledge
through *learning strategies*

Strengthening the Student Toolbox

Study Strategies to Boost Learning



BY JOHN DUNLOSKY

It's the night before her biology exam, and the high school student has just begun to study. She takes out her highlighter and reads her textbook, marking it up as she goes along. She rereads sentences that seem most important and stays up most of the night, just hoping to get a good enough grasp of the material to do well on the exam. These are study strategies that she may have learned from her friends or her teachers or that she simply took to on her own. She is not unusual in this regard; many students rely on strategies such as highlighting, rereading, and cramming the night before an exam.

Quite often, students believe these relatively ineffective strate-

John Dunlosky is a professor of psychology and the director of experimental training at Kent State University. His research focuses on self-regulated learning and how it can be used to improve student achievement across the lifespan.

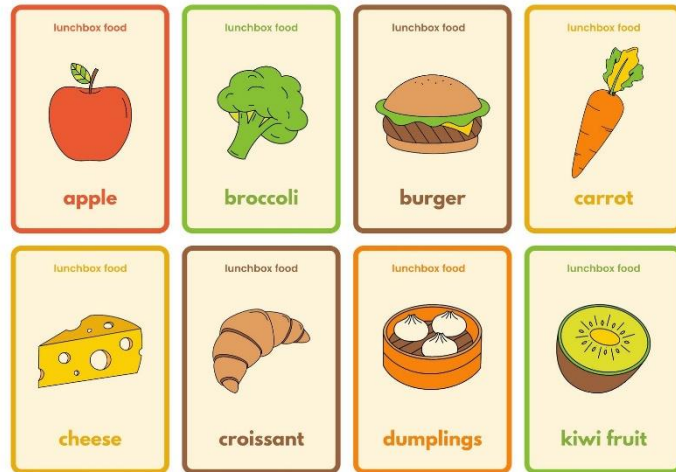
gies are actually the most effective,¹ and at least on the surface they do seem sound, perhaps because, even after pulling an all-nighter, students manage to squeak by on exams. Unfortunately, in a recent review of the research, my colleagues and I found that these strategies are not that effective,² especially if students want to retain their learning and understanding of content well after the exam is over—obviously, an important educational goal.

So, why aren't students learning about the best strategies? I can only speculate, but several reasons seem likely. Curricula are developed to highlight the content that teachers should teach, so the focus is on providing content and not on training students how to effectively acquire it. Put differently, the emphasis is on *what* students need to learn, whereas little emphasis—if any—is placed on training students *how* they should go about learning the content and what skills will promote efficient studying to support robust learning. Nevertheless, teaching students *how* to learn is as important as teaching them content, because acquir-

Learning strategies

Table 1 Effectiveness of Techniques Reviewed	
Technique	Extent and Conditions of Effectiveness
Practice testing	Very effective under a wide array of situations
Distributed practice	Very effective under a wide array of situations
Interleaved practice	Promising for math and concept learning, but needs more research
Elaborative interrogation	Promising, but needs more research
Self-explanation	Promising, but needs more research
Rereading	Distributed rereading can be helpful, but time could be better spent using another strategy
Highlighting and underlining	Not particularly helpful, but can be used as a first step toward further study
Summarization	Helpful only with training on how to summarize
Keyword mnemonic	Somewhat helpful for learning languages, but benefits are short-lived
Imagery for text	Benefits limited to imagery-friendly text, and needs more research

What underpins *learning to learn*?



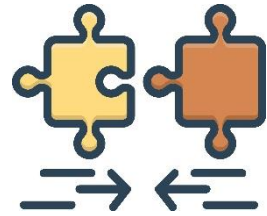
<https://bit.ly/canva-flashcards>

Learners have a limited repertoire of learning strategies



<https://bit.ly/3star-highlight>

Learning to learn in the age of AI



Select, master, and use most effective learning strategies in collaboration with AI



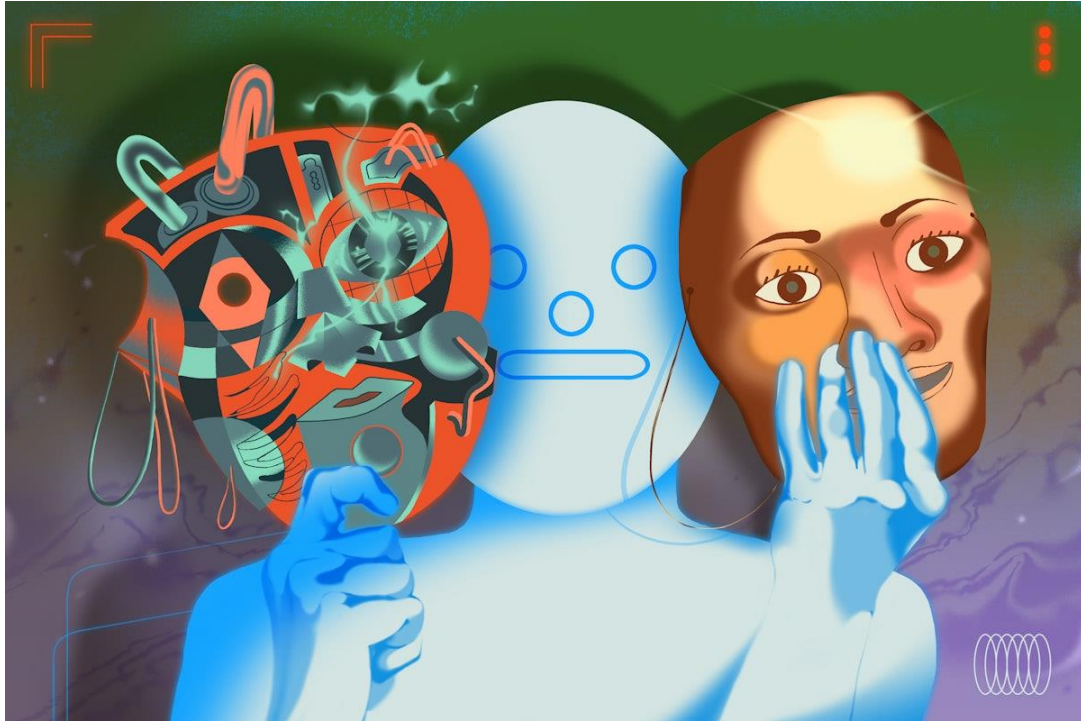
What underpins *learning to learn*?

Learners are agents who use
own judgements to make decisions

What underpins *learning to learn*?

Learners are *highly inaccurate* about
their judgements of learning

“Lazy” metacognition



Gen AI can worsen judgement of learning

<https://bit.ly/nr-genai-hallucinate>

What underpins *learning to learn*?



Information seeking skills are key to good self-regulated learning

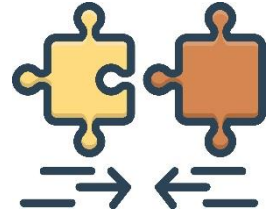
<https://www.lisedunetwork.com/what-information-seeking/>

Butcher, K. R., & Sumner, R. (2011). Self-Directed Learning and the Sensemaking Paradox. *Human-Computer Interaction*, 26(1-2), 123-159.

Inadvertent deception of ChatGPT

Inaccurate and verbose, but
users prefer ChatGPT responses

Learning to learn in the age of AI



Seek, learn, verify and apply information
in a new context with the use of AI

Potential reasons for the three limitations

Insufficient access to
the necessary learning data and
personalized feedback

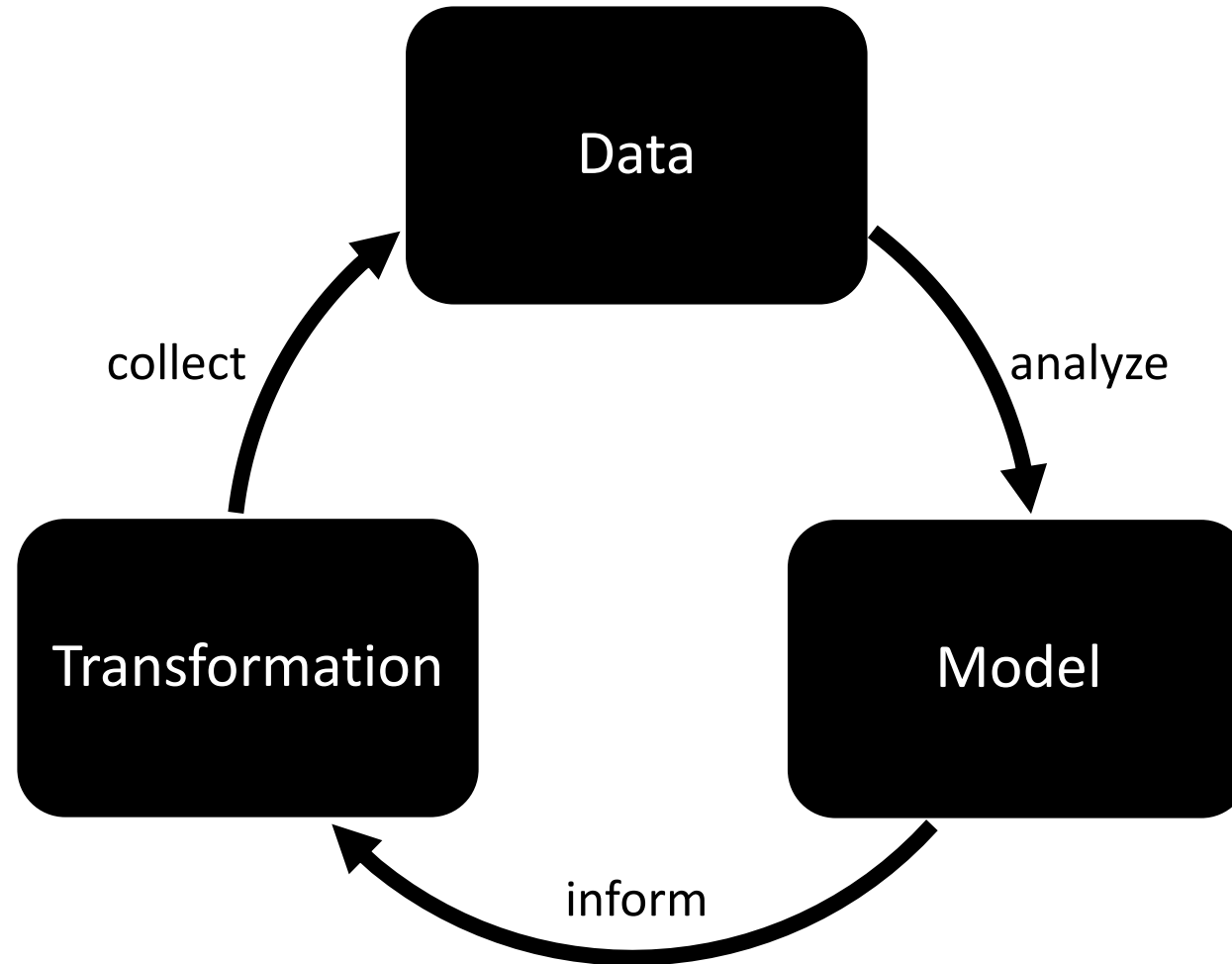
FOUNDATIONS – **FLORA** – IMPACT –
FINAL REMARKS



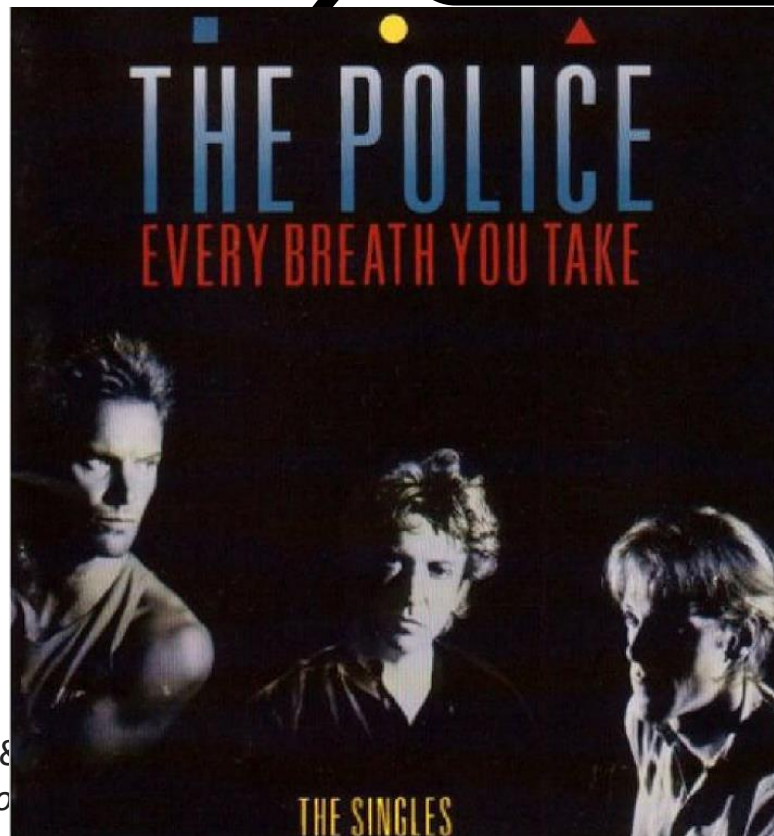
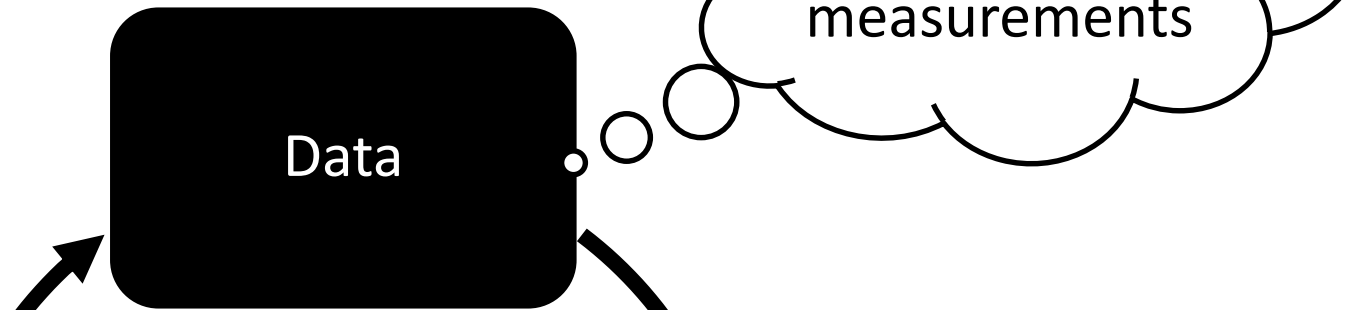
Our approach

Turing data into
personalized feedback for
learning to learn

Closing the loop of SRL analytics



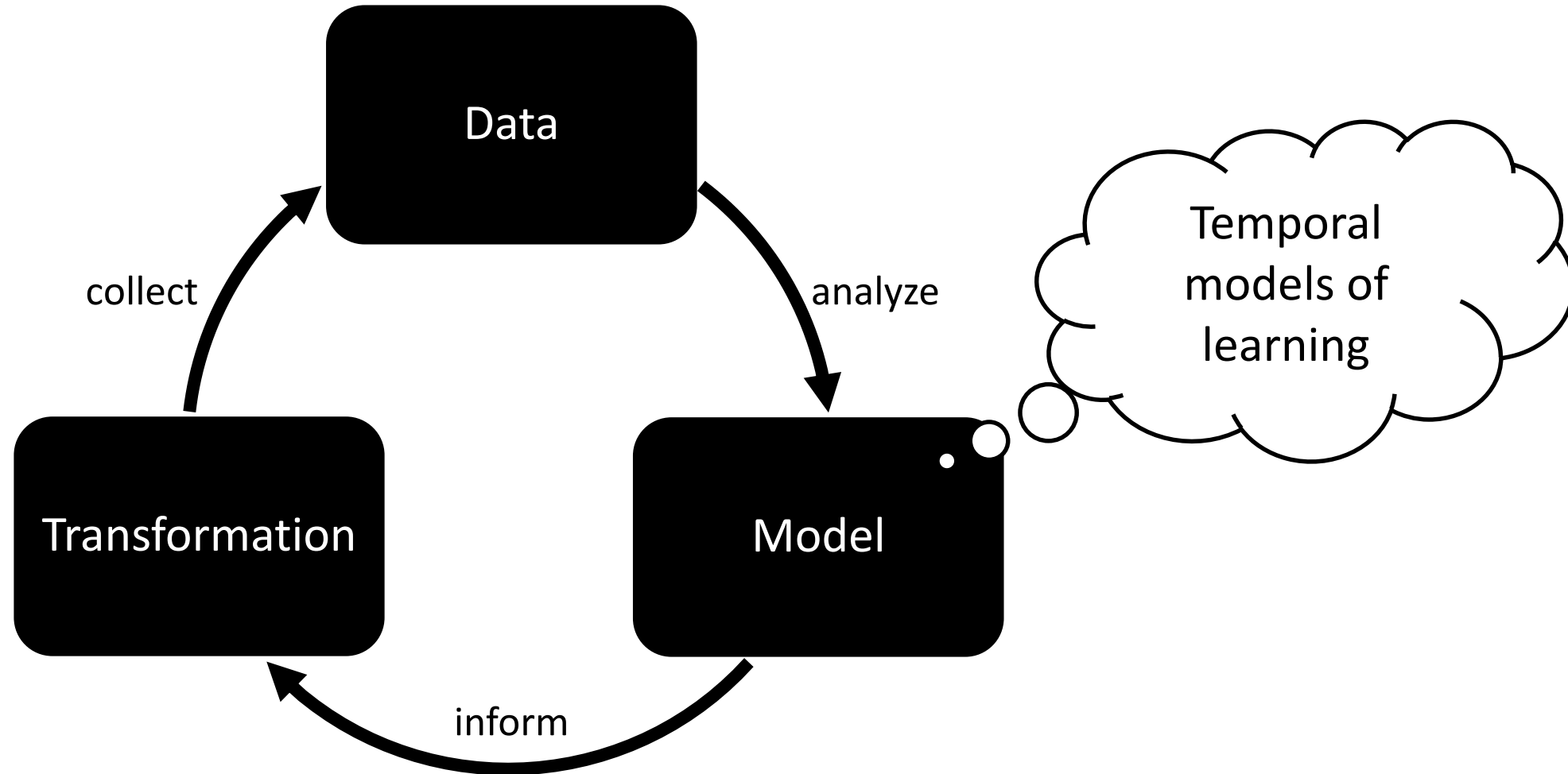
Closing the loop of SRI



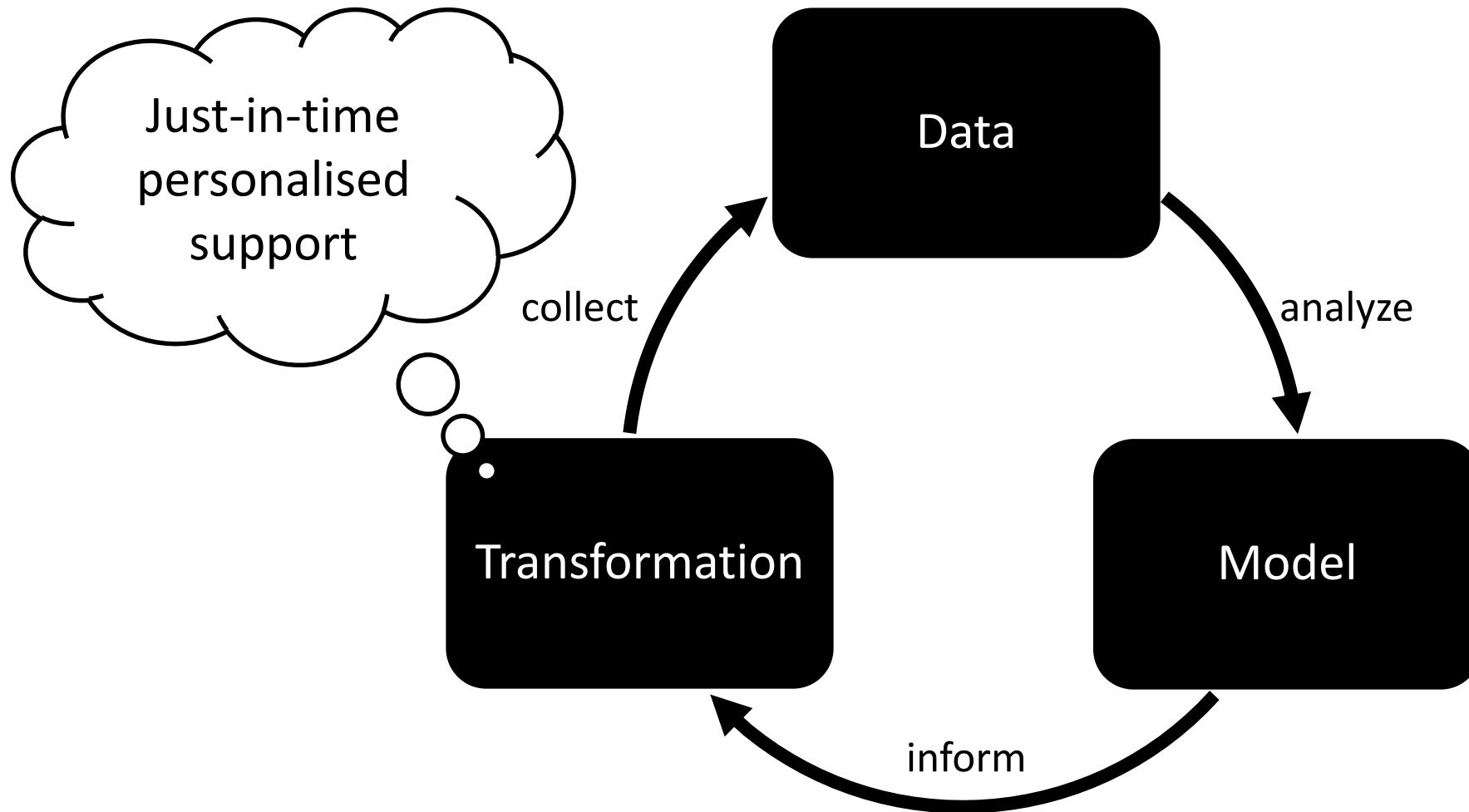
Every breath you take
And every move you make
Every bond you break
Every step you take
I'll be watching you

Every single day
And every word you say
Every game you play
Every night you stay
I'll be watching you

Closing the loop of SRL analytics



Closing the loop of SRL analytics



FLoRA

Supporting learning to learn
in comprehension and writing tasks



Hybrid human-AI regulation

Degrees of hybrid regulation	AI regulation	Human regulation	Function of dashboard
AI regulation	AI monitors and adjusts extensively	Aware of AI regulation	Raising awareness of AI regulation
Co-regulation	AI monitors and adjusts in small steps	Understanding how AI monitors and controls	Showing AI monitoring and modelling AI control
Shared-regulation	AI monitors and proposes control actions to the learner	Understanding monitoring and executing control	Showing monitoring and scaffolding learners' control
Self-regulation	Observing regulation	Monitoring and self-initiation of control	Showing learners' regulation to support their understanding

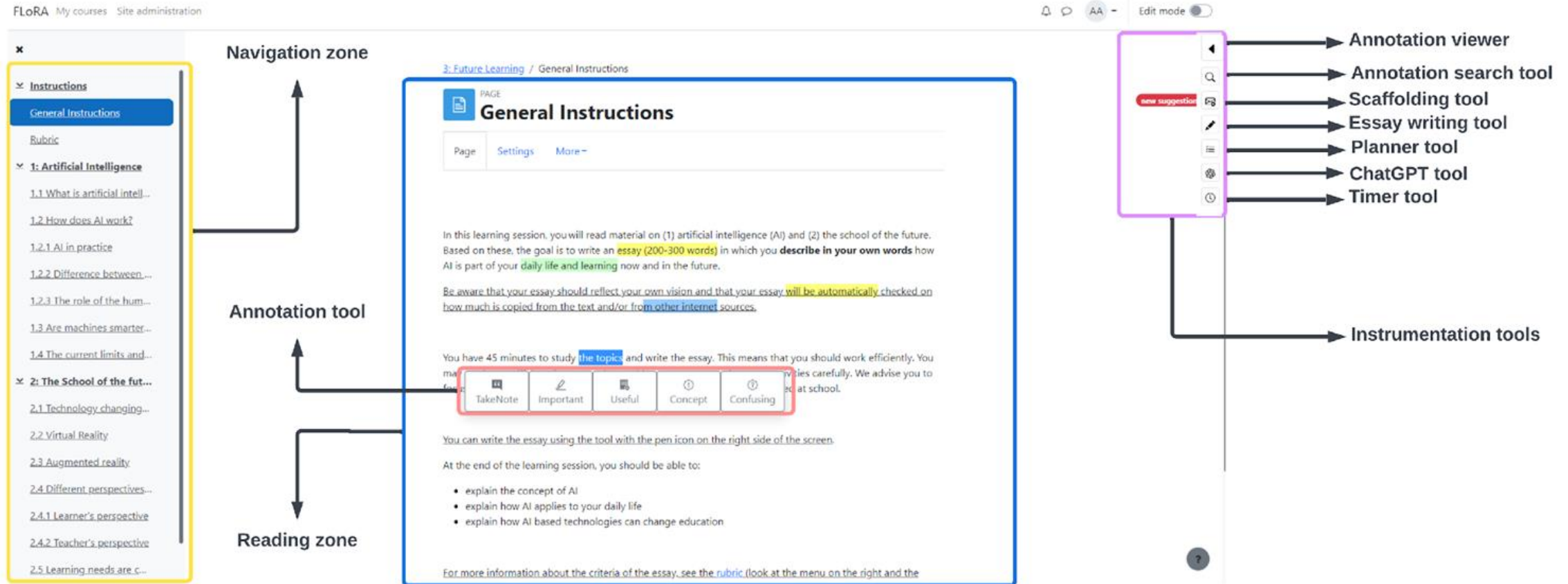
Hybrid human-AI regulation

Degrees of hybrid regulation	AI regulation	Human regulation	Function of dashboard
AI regulation	AI monitors and adjusts extensively	Aware of AI regulation	Raising awareness of AI regulation
Co-regulation	AI monitors and adjusts in small steps	Understanding how AI monitors and controls	Showing AI monitoring and modelling AI control
Shared-regulation	AI monitors and proposes control actions to the learner	Understanding monitoring and executing control	Showing monitoring and scaffolding learners' control
Self-regulation	Observing regulation	Monitoring and self-initiation of control	Showing learners' regulation to support their understanding

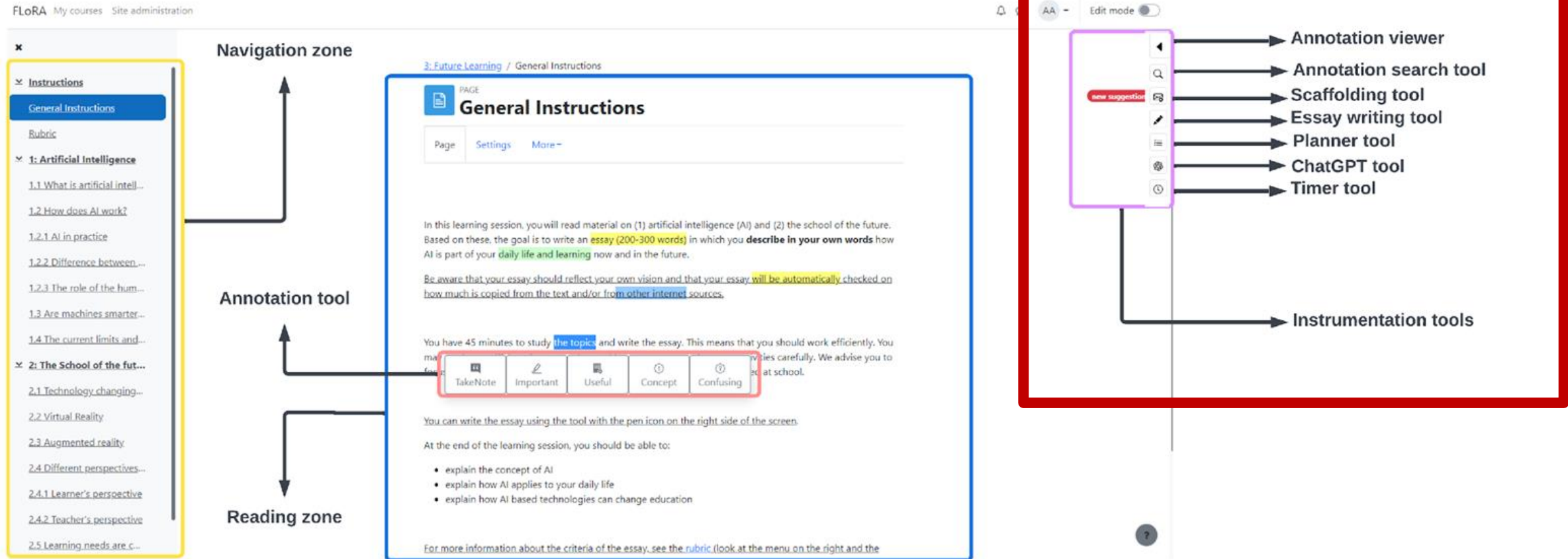
Hybrid human-AI regulation

Degrees of hybrid regulation	AI regulation	Human regulation	Function of dashboard
AI regulation	AI monitors and adjusts extensively	Aware of AI regulation	Raising awareness of AI regulation
Co-regulation	AI monitors and adjusts in small steps	Understanding how AI monitors and controls	Showing AI monitoring and modelling AI control
Shared-regulation	AI monitors and proposes control actions to the learner	Understanding monitoring and executing control	Showing monitoring and scaffolding learners' control
Self-regulation	Observing regulation	Monitoring and self-initiation of control	Showing learners' regulation to support their understanding

FLoRA



FLoRA tools



Reading tools – annotations

The screenshot shows the COLAM reading tool interface. The main content area displays a page titled "General Instructions" under the heading "3: Future Learning / General Instructions". The page content includes instructions for an essay writing task on artificial intelligence (AI) and the school of the future. A red box highlights a toolbar with five icons: TakeNote, Important, Useful, Concept, and Confusing. A yellow box highlights the left navigation menu, and a blue box highlights the main text area. A purple box highlights the right-side instrumentation tools menu.

Annotations and tool callouts are as follows:

- Navigation zone:** Points to the left navigation menu (yellow box).
- Annotation tool:** Points to the red-bordered toolbar (red box).
- Reading zone:** Points to the main text area (blue box).
- Instrumentation tools:** Points to the right-side menu (purple box).

The right-side menu includes the following tools:

- Annotation viewer
- Annotation search tool
- Scaffolding tool
- Essay writing tool
- Planner tool
- ChatGPT tool
- Timer tool

Reading tools – annotation search

The screenshot displays a Moodle course page titled 'General Instructions' under the 'Future Learning' section. The page content includes instructions for a vision essay on the future of education in 2035, with several terms highlighted in yellow, pink, and blue. A search tool on the right side of the page allows for keyword searches within the text, displaying results for terms like 'goal', 'environment that provide', 'applied', and 'spelling and grammatical'.

General Instructions

In this learning session, the **goal** is to write a vision essay that describes the future of education. Please describe, in 200 to 400 words, how you envision learning in a school in 2035.

Please consult the materials in this learning **environment that provide** information about three important factors for envisioning the future of education in 2035.

1. Artificial intelligence and its application
2. What differentiation is and how it is **applied** in the classroom context
3. The process of scaffolding and how it optimizes students learning

The goal of the learning session is to integrate these topics into a vision essay that describes learning in a school in 2035.

At the end of the learning session, you should be able to:

- explain the concepts of artificial intelligence, scaffolding and differentiation
- explain how they affect learning
- apply them in the context of education
- combine the concepts into a future vision for education

For more information about the criteria of the essay, see the [rubric](#).

You will have 120 minutes to read the texts, study the concepts and write the essay. Please note that you should work efficiently. We advise you to focus on the three important concepts, their relationships and their combination can form a future vision for education.

Annotation Search Results:

- Admin** (2023-3-8_22:42:48): goal, werwerwer. Tags: #note, #hellow. URL: <https://lak23.floraproject.org/moodle/mod/page/view>
- Admin** (2023-3-8_22:46:20): environment that provide. Tag: #important. URL: <https://lak23.floraproject.org/moodle/mod/page/view>
- Admin** (2023-3-8_22:46:23): applied. Tag: #concept. URL: <https://lak23.floraproject.org/moodle/mod/page/view>
- Admin** (2023-3-8_22:46:31): spelling and grammatical. Tag: #confusing. URL: <https://lak23.floraproject.org/moodle/mod/page/view>

Supporting planning

✕

Instructions

General Instructions

[Rubric](#)

1: Artificial Intelligence...

[1.1 Definition of Artificial...](#)

[1.2 History of Artificial Int...](#)

[1.3 How does AI work?](#)

[1.4 Ethics and risks of de...](#)

[1.5 Supervised machine l...](#)

[1.6 Unsupervised machin...](#)

[1.7 Reinforcement learning](#)

[1.8 Deep Learning](#)

2: Differentiation in Edu...

[2.1 What is Differentiation?](#)

[2.2 Using differentiation t...](#)

[2.3 Standards for teaching](#)

3: Scaffolding in Educa...

[3.1 The development of s...](#)

[3.2 What is cognitive app...](#)

General instructions

Page
Settings
More

In this learning session, the **goal** is to write a vision essay that describes the future of education. Please describe, in 200 to 400 words, how you envision learning in a school in 2035.

Please consult the materials in this learning **environment that provide** information about three important concepts for envisioning the future of education in 2035.

1. Artificial intelligence and its application
2. What differentiation is and how it is **applied** in the classroom context
3. The process of scaffolding and how it optimizes students learning

The goal of the learning session is to integrate these topics into a vision essay that describes learning in a school in 2035.

At the end of the learning session, you should be able to:

- explain the concepts of artificial intelligence, scaffolding and differentiation
- explain how they affect learning
- apply them in the context of education
- combine the concepts into a future vision for education

[For more information about the criteria of the essay, see the rubric.](#)

You will have 120 minutes to read the texts, study the concepts and write the essay. Please note that you should work efficiently. We advise you to focus on the three important concepts, their relationships and their combination can form a future vision for education.

Planner tool

My Learning Plan

Overall strategy: Read First, then Write

Time allocation:


1. Read first module - AI	11 minutes
2. Read second module - Differentiation	11 minutes
3. Read third module - Scaffolding	11 minutes
4. Write essay	11 minutes

Reading strategy:

- Read the material page by page
- Quick browsing and then detailed reading

Writing strategy:

- First draft an essay structure and then fill in with details
- Use my notes and highlighting when writing the essay



Scaffolding tool

✕

Instructions

General Instructions

Rubric

1: Artificial Intelligence...

1.1 Definition of Artificial...

1.2 History of Artificial Int...

1.3 How does AI work?

1.4 Ethics and risks of de...

1.5 Supervised machine l...

1.6 Unsupervised machin...

1.7 Reinforcement learning

1.8 Deep Learning

2: Differentiation in Ed...

2.1 What is Differentiation?

2.2 Using differentiation t...

2.3 Standards for teaching

3: Scaffolding in Educa...

3.1 The development of s...

3.2 What is cognitive app...

[3: Future Learning](#) / General Instructions

PAGE

General Instructions

Page [Settings](#) [More](#)

In this learning session, the goal is to write a vision essay that describes the future of education. Please describe, in 200 to 400 words, how you envision learning in a school in 2035.

Please consult the materials in this learning environment that provide information about three important concepts for envisioning the future of education in 2035.

- Artificial intelligence and its application
- What differentiation is and how it is applied in the classroom context
- The process of scaffolding and how it optimizes students learning

The goal of the learning session is to integrate these topics into a vision essay that describes learning in a school in 2035.

At the end of the learning session, you should be able to:

- explain the concepts of artificial intelligence, scaffolding and differentiation
- explain how they affect learning
- apply them in the context of education
- combine the concepts into a future vision for education

[For more information about the criteria of the essay, see the rubric.](#)

You will have 120 minutes to read the texts, study the concepts and write the essay. Please note that you should work efficiently. We advise you to focus on the three important concepts, their relationships and their combination can form a future vision for education.

Scaffolding tool

S1 S2 S3 S4 S5

Accurate understanding of the content and requirements of literacy task is critical.

Based on your learning behaviour so far, we recommend the following steps:

(a) Use table of content to get an overview and skim text

(b) Check the essay rubric carefully

(c) Make sure you understand the learning goals and instructions

(d) Process information by taking notes.

Create Checklist

Scaffolding tool

Instructions

General Instructions

Rubric

1: Artificial Intelligence...

1.1 Definition of Artificial...

1.2 History of Artificial Int...

1.3 How does AI work?

1.4 Ethics and risks of de...

1.5 Supervised machine l...

1.6 Unsupervised machin...

1.7 Reinforcement learning

1.8 Deep Learning

2: Differentiation in Ed...

2.1 What is Differentiation?

2.2 Using differentiation t...

2.3 Standards for teaching

3: Scaffolding in Educa...

3.1 The development of s...

3.2 What is cognitive app...

3: Future Learning / General Instructions

PAGE

General Instructions

Page Settings More-

In this learning session, the goal is to write a vision essay that describes the future of education. Please describe, in 200 to 400 words, how you envision learning in a school in 2035.

Please consult the materials in this learning environment that provide information about three important concepts for envisioning the future of education in 2035.

1. Artificial intelligence and its application
2. What differentiation is and how it is applied in the classroom context
3. The process of scaffolding and how it optimizes students learning

The goal of the learning session is to integrate these topics into a vision essay that describes learning in a school in 2035.

At the end of the learning session, you should be able to:

- explain the concepts of artificial intelligence, scaffolding and differentiation
- explain how they affect learning
- apply them in the context of education
- combine the concepts into a future vision for education

[For more information about the criteria of the essay, see the rubric.](#)

You will have 120 minutes to read the texts, study the concepts and write the essay. Please note that you should work efficiently. We advise you to focus on the three important concepts, their relationships and their combination can form a future vision for education.

Scaffolding tool

S1 S2 S3 S4 S5

Accurate understanding of the content and requirements of literacy task is critical.

Based on your learning behaviour so far, we recommend the following steps:

- (a) Use table of content to get an overview and skim text
- (b) Check the essay rubric carefully

Edit

Scaffolding tool

×

Instructions

General Instructions

Rubric

1: Artificial Intelligence...

1.1 Definition of Artificial...

1.2 History of Artificial Int...

1.3 How does AI work?

1.4 Ethics and risks of de...

1.5 Supervised machine l...

1.6 Unsupervised machin...

1.7 Reinforcement learning

1.8 Deep Learning

2: Differentiation in Ed...

2.1 What is Differentiation?

2.2 Using differentiation t...

2.3 Standards for teaching

3: Scaffolding in Educa...

3.1 The development of s...

3.2 What is cognitive app...

3: Future Learning / General Instructions

PAGE

General Instructions

Page Settings More

In this learning session, the goal is to write a vision essay that describes the future of education. Please describe, in 200 to 400 words, how you envision learning in a school in 2035.

Please consult the materials in this learning environment that provide information about three important concepts for envisioning the future of education in 2035.

1. Artificial intelligence and its application
2. What differentiation is and how it is applied in the classroom context
3. The process of scaffolding and how it optimizes students learning

The goal of the learning session is to integrate these topics into a vision essay that describes learning in a school in 2035.

At the end of the learning session, you should be able to:

- explain the concepts of artificial intelligence, scaffolding and differentiation
- explain how they affect learning
- apply them in the context of education
- combine the concepts into a future vision for education

[For more information about the criteria of the essay, see the rubric.](#)

You will have 120 minutes to read the texts, study the concepts and write the essay. Please note that you should work efficiently. We advise you to focus on the three important concepts, their relationships and their combination can form a future vision for education.

Scaffolding tool

S1 S2 S3 S4 S5

Accurate understanding of the content and requirements of literacy task is critical.

Based on your learning behaviour so far, we recommend the following steps:

- (a) Use table of content to get an overview and skim-text
- (b) Check the essay rubric carefully
- (c) Make sure you understand the learning goals and instructions

Edit

GPT Scaffolding Tool

3: Future Learning / General Instructions

PAGE

General Instructions

Page Settings More

In this learning session, you will read material on (1) artificial intelligence and (2) the medicine. The student cannot use reading materials outside of those provided in the environment. You need to write an essay (200-300 words) in which they describe in their own words how AI is used in life and how health care now and in the future would look like.

The essay should reflect the your own vision and the essay will be automatically checked for plagiarism. The essay is copied from the text and/or from other internet sources.

You have 45 minutes to study the topics and write the essay. This means that you should write an essay that may not have sufficient time to read everything, so you must select your activities carefully. You should focus on the two topics, how AI works and how new technologies can be used in health care.

At the end of the learning session, you should be able to:

- explain the concept of AI
- explain how AI applies to your daily life
- explain how AI based technologies can change health care

You can use different tools provided in the learning environment to help you with the task: highlight and tag parts of texts and to take notes), planner and essay writing tool.

GPT Scaffolding Panel

7. Try to apply different learning strategies
12:38:00

Scaffold 2
You've understood the task instructions well, but it seems you're struggling to incorporate the reading material into your essay. To improve, try to identify key points from the readings that align with the essay's topics. Then, paraphrase these points in your own words and weave them into your essay to support your arguments. This will not only enhance your understanding of AI in medicine but also help you meet the task requirements. Remember, you have the tools and ability to do this. Keep going!
12:39:52

Scaffold 3
You've done well in understanding the task instructions and utilizing the available reading materials. However, it's crucial to expand on the information from these materials in your own words. Consider diving deeper into the concepts, providing personal insights, and making connections between AI and its future applications in medicine. This will not only enhance your understanding but also improve your essay's originality and depth.
12:41:51

Closing the personalized feedback loop

FLoRA Home My courses Site administration

- ✕
- ✖ Instructions
 - General Instructions
 - Rubric
- ✖ 1: Artificial Intelligence i...
 - 1.1 Definition of Artificial I...
 - 1.2 History of Artificial Intel...
 - 1.3 How does AI work?
 - 1.4 Ethics and risks of deve...
 - 1.5 Supervised machine lea...
 - 1.6 Unsupervised machine ...
 - 1.7 Reinforcement learning
 - 1.8 Deep Learning
- ✖ 2: Differentiation in Educ...
 - 2.1 What is Differentiation?
 - 2.2 Using differentiation to...
 - 2.3 Standards for teaching
- ✖ 3: Scaffolding in Education
 - 3.1 The development of sc...
 - 3.2 What is cognitive appr...
 - 3.3 What is scaffolding
 - 3.4 Applications of scaffold...
 - 3.5 Applications of coactiv...

3: Future Learning / General Instructions

General Instructions

Page Settings More-

In this learning session, the goal is to write a vision essay that describes the future of education. Please describe, in 200 to 400 words, how you envision learning in a school in 2035.

Please consult the materials in this [learning](#) environment that provide information about three important topics for envisioning the future of education in 2035.

1. Artificial intelligence and its application
2. What differentiation is and how it is applied in the classroom context
3. The process of scaffolding and how it optimizes students learning

The goal of the learning session is to integrate these topics into a vision essay that describes learning in a school in 2035.

At the end of the learning session, you should be able to:

- explain the concepts of artificial intelligence, scaffolding and differentiation
- explain how they affect learning
- apply them in the context of education
- combine the concepts into a future vision for education

For more information about the criteria of the essay, see the [rubric](#).

You will have 120 minutes to read the texts, study the concepts and write the essay. Please note that you should work efficiently. We advise you to focus on the three important concepts, their relationship; their combination can form a future vision for education.

Analytics-based feedback with generative AI

GPT Scaffold Panel

Scaffold 1

You've made a good start, but remember to regularly refer back to the task instructions to ensure you're on track. This will help you focus your efforts and use your time efficiently. Keep up the good work and remember, understanding the task fully is key to a successful essay.

18:37:18

Closing the personalized feedback loop

FLoRA Home My courses Site administration

The screenshot shows the FLoRA Scaffold Panel for '3: Future Learning / General Instructions'. A large magnifying glass highlights a feedback message in a grey box: 'You've made a good start, but remember to regularly refer back to the task instructions to ensure you're on track. This will help you focus your efforts and use your time efficiently. Keep up the good work and remember, understanding the task fully is key to a successful essay. 18:37:18'. A callout bubble on the right contains the text 'Analytics-based feedback with AI'. The left sidebar shows a navigation menu with sections for 'Instructions', '1: Artificial Intelligence i...', '2: Differentiation in Educ...', and '3: Scaffolding in Educat...'. A black arrow points from the magnifying glass towards the bottom of the page.

Analytics-based feedback with AI

Closing the personalized feedback loop

FLoRA Home My courses Site administration

Multiple languages can easily be supported with gen AI

3: Future Learning / General Instructions

General Instructions Scaffold Panel

Page Settings Scaffold 1

In this learning session, you will describe, in 200 words, the following:

1. Artificial intelligence
2. What differentiates
3. The process of learning

The goal of this activity is to help you understand the importance of scaffolding in education. You will have 120 minutes to complete this activity. Your work should work efficiently, and your combination can be used to improve your learning process.

Hei! Huomaan, että et ole vielä tutustunut oppimateriaalin taulukkoon tai kokeillut kaikkia oppimistyökaluja. Tämä voi auttaa sinua ymmärtämään tehtävän vaatimukset paremmin. Kokeile käyttää näitä resursseja ja tee muistiinpanoja tai korostuksia, jotka auttavat sinua hahmottamaan tehtävän tavoitteet ja suunnitelman. Muista myös pitää silmällä jäljellä olevaa aikaa.

18:41:56

<http://floraproject.e>

Instructions

General Instructions

Rubric

1: Artificial Intelligence...

1.1 Definition of Artificial...

1.2 History of Artificial Int...

1.3 How does AI work?

1.4 Ethics and risks of de...

1.5 Supervised machine l...

1.6 Unsupervised machin...

1.7 Reinforcement learning

1.8 Deep Learning

2: Differentiation in Ed...

2.1 What is Differentiation?

2.2 Using differentiation t...

2.3 Standards for teaching

3: Scaffolding in Educa...

3.1 The development of s...

3.2 What is cognitive app...

3: Future Learning / General Instructions

PAGE
General Instructions

Page Settings More-

In this learning session, the **goal** is to write a vision essay that describes the future of education. Please describe, in 200 to 400 words, how you envision learning in a school in 2035.

Please consult the materials in this learning **environment that provide** information about three important topics for envisioning the future of education in 2035.

1. Artificial intelligence and its application
2. What differentiation is and how it is **applied** in the classroom context
3. The process of scaffolding and how it optimizes students learning

The
sche
At t
•
•
•
•
For
You
sho
thei

Essay Writing

4 words

Normal B I U  x_2 x^2 A        

this is essay writing

Save Essay

Grammar support

- ✕
- Instructions
 - General Instructions
 - Rubric
- 1: Artificial Intelligence i...
 - 1.1 Definition of Artificial I...
 - 1.2 History of Artificial Intel...
 - 1.3 How does AI work?
 - 1.4 Ethics and risks of deve...
 - 1.5 Supervised machine lea...
 - 1.6 Unsupervised machine...
 - 1.7 Reinforcement learning
 - 1.8 Deep Learning
- 2: Differentiation in Educ...
 - 2.1 What is Differentiation?
 - 2.2 Using differentiation to...
 - 2.3 Standards for teaching
- 3: Scaffolding in Education
 - 3.1 The development of sc...
 - 3.2 What is cognitive appr...
 - 3.3 What is scaffolding
 - 3.4 Applications of scaffold...
 - 3.5 Applications of coactiv...

5: Essay Revision / General Instructions

General Instructions

In this learning session, the goal is to write a vision essay that describes the future of education. Please describe, in 200 to 400 words, how you envision learning in a school in 2035.

Please consult the materials in this learning environment that provide information about three important topics

Essay Writing 238 words

Normal B I U X₂ X² [List Icons]

Nowadays, the role of AI in education is left in some tangible educational products. More and more data are needed to make AI work better. And the scaffolding is that the work is shared alone between the learner and some more knowledgeable other or agent. In addition, it also enables learning from the experience. Scaffolding to optimize learning needs to acquire more knowledge. Besides, as we all know, differentiation is a combination of careful progress monitoring and adapting instruction in response. By this, students or learners could be divided into different groups by their teachie according to their competence degree. In these groups, students can learn knowledge that they don't understand and make progress belonging to themselves. Differentiation practices in the classroom will help students in their group process.

Integration of three topics is very essential and all three are indispensable. In the future education, the three should complement each other. Respectively, there are great expectations for AI in education to help students and teachers work better. To facilitate our independent and appropriate use in education in the future, we should learn more on how the scaffolding component skills work and so on. Furthermore, differentiation should be paid more attention in education. Beyond that, the three should continue to innovate, so as to better serve the education and other industries in the future.

An important difference between other programs and those that use AI is the ability to learn.

Save Essay

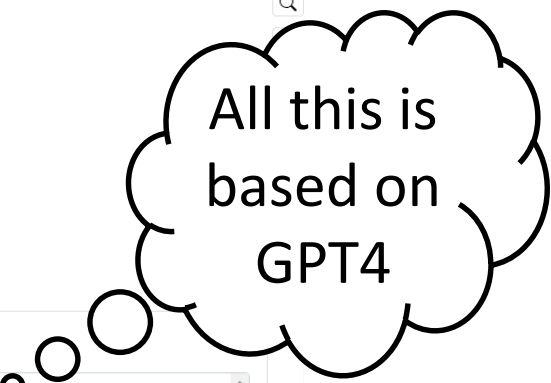
Checklist Tool

Basic Academic Originality Integration and elaboration

Sentence Text: Nowadays, the role of AI in education is left in some tangible educational products.
 Error Position: "is left in"
 Error Correction: "is seen in"
 Error Explanation: The phrase "is left in" is incorrect in this context. The correct phrase should be "is seen in" to indicate that the role of AI is evident in some tangible educational products.
 Error Type: Wrong word usage

Sentence Text: More and more data are needed to make AI work better.
 Error Position: "are"
 Error Correction: "is"
 Error Explanation: The word "data" is often treated as a singular noun in English, especially when referring to a collection of data points. Therefore, "is" should be used instead of "are".
 Error Type: Subject-verb agreement

This analysis may take around 5-10 min to process. Analyse



Formal academic writing support

FLoRA My courses Site administration

Ad - Edit mode

✕

Instructions

General Instructions

Rubric

1: Artificial Intelligence i...

1.1 Definition of Artificial I...

1.2 History of Artificial Intel...

1.3 How does AI work?

1.4 Ethics and risks of deve...

1.5 Supervised machine lea...

1.6 Unsupervised machine...

1.7 Reinforcement learning

1.8 Deep Learning

2: Differentiation in Educ...

2.1 What is Differentiation?

2.2 Using differentiation to...

2.3 Standards for teaching

3: Scaffolding in Education

3.1 The development of sc...

3.2 What is cognitive appr...

3.3 What is scaffolding

3.4 Applications of scaffold...

3.5 Applications of cognitiv...

5: Essay Revision / General Instructions

PAGE

General Instructions

Page Settings More-

In this learning session, the goal is to write a vision essay that describes the future of education. Please describe, in 200 to 400 words, how you envision learning in a school in 2035.

Please consult the materials in this learning environment that provide information about three important topics

Essay Writing

238 words

Normal B I U x₂ x² [list icons]

Nowadays, the role of AI in education is left in some tangible educational products. More and more data are needed to make AI work better. And the scaffolding is that the work is shared alone between the learner and some more knowledgeable other or agent. In addition, it also enables learning from the experience. Scaffolding to optimize learning needs to acquire more knowledge. Besides, as we all know, differentiation is a combination of careful progress monitoring and adapting instruction in response. By this, students or learners could be divided into different groups by their teacher according to their competence degree. In these groups, students can learn knowledge that they don't understand and make progress belonging to themselves. Differentiation practices in the classroom will help students in their group process.

Integration of three topics is very essential and all three are indispensable. In the future education, the three should complement each other. Respectively, there are great expectations for AI in education to help students and teachers work better. To facilitate our independent and appropriate use in education in the future, we should learn more on how the scaffolding component skills work and so on. Furthermore, differentiation should be paid more attention in education. Beyond that, the three should continue to innovate, so as to better serve the education and other industries in the future.

An important difference between other programs and those that use AI is the ability to learn.

Save Essay

Checklist Tool

Basic Academic Originality Integration and elaboration

Sentence: Nowadays, the role of AI in education is left in some tangible educational products.
 Incorrect Word: Nowadays
 Recommend Change: At present/Currently
 Bad Example: Nowadays it's acceptable for women to be ambitious. Nowadays, for every person there are 3 mobile phones.
 Good Example: At present, it is acceptable for women to be ambitious. Currently, every person possesses an average of 3 mobile phones.

Incorrect Word: is left
 Recommend Change: remain
 Bad Example: It is left unclear why antibiotic resistance has increased in the past decade.
 Good Example: It remains unclear why antibiotic resistance has increased in the past decade.

Incorrect Word: left
 Recommend Change: exit
 Bad Example: In our protein structure, the associated RNA molecule goes out near the N-terminus.
 Good Example: In our protein structure, the associated RNA molecule exits near the N-terminus.

This analysis may take around 5-10 min to process. Analyse

Originality testing

- ✕
- Instructions
 - General Instructions
 - Rubric
- 1: Artificial Intelligence i...
 - 1.1 Definition of Artificial I...
 - 1.2 History of Artificial Intel...
 - 1.3 How does AI work?
 - 1.4 Ethics and risks of deve...
 - 1.5 Supervised machine lea...
 - 1.6 Unsupervised machine...
 - 1.7 Reinforcement learning
 - 1.8 Deep Learning
- 2: Differentiation in Educ...
 - 2.1 What is Differentiation?
 - 2.2 Using differentiation to...
 - 2.3 Standards for teaching
- 3: Scaffolding in Education
 - 3.1 The development of sc...
 - 3.2 What is cognitive appr...
 - 3.3 What is scaffolding
 - 3.4 Applications of scaffold...
 - 3.5 Applications of cognitiv...

5: Essay_Revision / General Instructions

General Instructions

Page Settings More -

In this learning session, the goal is to write a vision essay that describes the future of education. Please describe, in 200 to 400 words, how you envision learning in a school in 2035.

Please consult the materials in this learning environment that provide information about three important topics

Essay Writing 238 words

Normal
B I U
x₂ x²
≡ ≡ ≡
▶ ⌂

Nowadays, the role of AI in education is left in some tangible educational products. More and more data are needed to make AI work better. And the scaffolding is that the work is shared alone between the learner and some more knowledgeable other or agent. In addition, it also enables learning from the experience. Scaffolding to optimize learning needs to acquire more knowledge. Besides, as we all know, differentiation is a combination of careful progress monitoring and adapting instruction in response. By this, students or learners could be divided into different groups by their teacher according to their competence degree. In these groups, students can learn knowledge that they don't understand and make progress belonging to themselves. Differentiation practices in the classroom will help students in their group process.

Integration of three topics is very essential and all three are indispensable. In the future education, the three should complement each other. Respectively, there are great expectations for AI in education to help students and teachers work better. To facilitate our independent and appropriate use in education in the future, we should learn more on how the scaffolding component skills work and so on. Furthermore, differentiation should be paid more attention in education. Beyond that, the three should continue to innovate, so as to better serve the education and other industries in the future.

An important difference between other programs and those that use AI is the ability to learn.

Save Essay

Checklist Tool

Basic
Academic
Originality
Integration and elaboration

Essay Sentence: And the scaffolding is that the work is shared alone between the learner and some more knowledgeable other or agent.

Similar Part: between the learner and some more knowledgeable other or agent

Essay Sentence: An important difference between other programs and those that use AI is the ability to learn.

Similar Part: an important difference between other programs and those that use ai is the ability to learn

Essay Sentence: Respectively, there are great expectations for AI in education to help students and teachers work better.

Similar Part: there are great expectations for ai in education

This analysis may take around 5-10 min to process. Analyse

Rhetorical structures – integration

FLoRA Home My courses Site administration

🔔 🗨️ AU - Edit mode

- ✕
- ☰ **Instructions**
- General Instructions
- Rubric
- ☰ **1: Artificial Intelligence i...**
- 1.1 Definition of Artificial I...
- 1.2 History of Artificial Intel...
- 1.3 How does AI work?
- 1.4 Ethics and risks of deve...
- 1.5 Supervised machine lea...
- 1.6 Unsupervised machine ...
- 1.7 Reinforcement learning
- 1.8 Deep Learning
- ☰ **2: Differentiation in Educ...**
- 2.1 What is Differentiation?
- 2.2 Using differentiation to...
- 2.3 Standards for teaching
- ☰ **3: Scaffolding in Education**
- 3.1 The development of sc...
- 3.2 What is cognitive appr...
- 3.3 What is scaffolding
- 3.4 Applications of scaffold...
- 3.5 Applications of coactiv...

[3: Future Learning](#) / General Instructions

General Instructions

Page Settings More-

In this learning session, the goal is to write a vision essay that describes the future of education. Please describe, in 200 to 400 words, how you envision learning in a school in 2035.

Please consult the materials in this [learning](#) environment that provide information about three important topics for envisioning the future of education in 2035.

Essay Writing

222 words

Normal B I U

Nowadays, the role of AI in education is limited in some tangible educational products. More and more data are needed to make AI work better. And the scaffolding is that the work is shared alone between the learner and some more knowledgeable other or agent. In addition, it also enables learning from the experience. Scaffolding to optimize learning needs to acquire more knowledge. Besides, as we all know, differentiation is a combination of careful progress monitoring and adapting instruction in response. By this, students or learners could be divided into different groups by their teacher according to their competence degree. In these groups, students can learn knowledge that they don't understand and make progress belonging to themselves. Differentiation practices in the classroom will help students in their group process.

Integration of three topics is very essential and all three are indispensable. In the future education, the three should complement each other. Respectively, there are great expectations for AI in education to help students and teachers work better. To facilitate our independent and appropriate use in education in the future, we should learn more on how the scaffolding component skills work and so on. Furthermore, differentiation should be paid more attention in education. Beyond that, the three should continue to innovate, so as to better serve the education and other industries in the future.

Save Essay

Checklist Tool

Basic Academic Originality Integration and elaboration

Essay Sentence: Nowadays, the role of AI in education is limited in some tangible educational products.
Integration Level: Remember and understand

Essay Sentence: More and more data are needed to make AI work better.
Integration Level: Evaluate and create

Essay Sentence: And the scaffolding is that the work is shared alone between the learner and some more knowledgeable other or agent.
Integration Level: Evaluate and create

Essay Sentence: In addition, it also enables learning from the experience.
Integration Level: Apply and analyse

Essay Sentence: Scaffolding to optimize learning needs to acquire more knowledge.

This analysis may take around 5-10 min to process.

Analyse

All this is based on GPT4



Rhetorical structures – integration

FLoRA Home My courses Site administration

🔔 AU - Edit mode

- Instructions
- General Instructions
- Rubric
- 1: Artificial Intelligence i...
- 1.1 Definition of Artificial I...
- 1.2 History of Artificial Intel...
- 1.3 How does AI work?
- 1.4 Ethics and risks of deve...
- 1.5 Supervised machine lea...
- 1.6 Unsupervised machine...
- 1.7 Reinforcement learning
- 2: Teaching
- 3: Scaffolding in Education
- 3.1 The development of sc...
- 3.2 What is cognitive appr...
- 3.3 What is scaffolding
- 3.4 Applications of scaffold...
- 3.5 Applications of coactiv...

3: Future Learning / General Instructions

General Instructions

Page Settings

AI in education is limited in some tangible educational products. More and more data are needed to make AI work better. And the scaffolding is that the work is shared alone between the learner and some more knowledgeable other or agent. In addition, it also enables learning from the experience. Scaffolding to optimize learning needs to acquire more knowledge. Besides, as we all know, differentiation is a combination of careful progress monitoring and adapting instruction in response. By this, students or learners could be divided into different groups by their teacher according to their competence degree. In these groups, students can learn knowledge that they don't understand and make progress belonging to themselves. Differentiation practices in the classroom will help students in their group process.

Integration of three topics is very essential and all three are indispensable. In the future education, the three should complement each other. Respectively, there are great expectations for AI in education to help students and teachers work better. To facilitate our independent and appropriate use in education in the future, we should learn more on how the scaffolding component skills work and so on. Furthermore, differentiation should be paid more attention in education. Beyond that, the three should continue to innovate, so as to better serve the education and other industries in the future.

Save Essay

Checklist Tool

Basic Academic Originality Integration and

Essay Sentence: Nowadays, the role of AI in education is limited in some tangible educational products.
Integration Level: Remember and understand

Essay Sentence: More and more data are needed to make AI work better.
Integration Level: Evaluate and create

Essay Sentence: And the scaffolding is that the work is shared alone between the learner and some more knowledgeable other or agent.
Integration Level: Evaluate and create

Essay Sentence: In addition, it also enables learning from the experience.
Integration Level: Apply and analyse

Essay Sentence: Scaffolding to optimize learning needs to acquire more knowledge.

This analysis may take around 5 minutes.

ChatGPT in FLoRA

- ✕
- ✕ **Instructions**
- General Instructions
- Rubric
- ✕ **1: Artificial Intelligence...**
- 1.1 Definition of Artificial ...
- 1.2 History of Artificial Int...
- 1.3 How does AI work?
- 1.4 Ethics and risks of de...
- 1.5 Supervised machine l...
- 1.6 Unsupervised machin...
- 1.7 Reinforcement learning
- 1.8 Deep Learning
- ✕ **2: Differentiation in Ed...**
- 2.1 What is Differentiation?
- 2.2 Using differentiation t...
- 2.3 Standards for teaching
- ✕ **3: Scaffolding in Educa...**
- 3.1 The development of s...

[3: Future Learning](#) / General Instructions

PAGE
General Instructions

Page Settings More

Essay Writing 236 words

Normal **B** *I* U x_2 x^2

AI in Education. Ai plays an important role in Education. Nowadays, the role of AI in education is limited in some tangible educational products. More and more data are needed to make AI work better. And the scaffolding is that the work is shared alone between the learner and some more knowledgeable other or agent. In addition, it also enables learning from the experience. Scaffolding to optimize learning needs to acquire more knowledge. Besides, as we all know, differentiation is a combination of careful progress monitoring and adapting instruction in response. By this, students or learners could be divided into different groups by their teacher according to their competence degree. In these groups, students can learn knowledge that they don't understand and make progress belonging to themselves. Differentiation practices in the classroom will help students in their group process.

Integration of three topics is very essential and all three are indispensable. In the future education, the three should complement each other. Respectively, there are great expectations for AI in education to help students and teachers work better. To facilitate our independent and appropriate use in education in the future, we should learn more on how the scaffolding component skills work and so on. Furthermore, differentiation should be paid more attention in education. Beyond that, the three should continue to innovate, so as to better serve the education and other industries in the future. Ai is good now.

ChatGPT Tool

Can you give more advice on how to improve the essay?
18:20:01

Certainly! Here are some additional suggestions to improve your essay:

1. Expand on the role of AI in education: Discuss specific examples of how AI can be applied to learning, such as personalized learning, adaptive assessments, and intelligent tutoring systems. Explain how these applications can contribute to an innovative vision of education in 2035.
2. Elaborate on scaffolding to optimize learning: Provide examples of how scaffolding techniques can be used to support learners in acquiring new

ChatGPT in FLoRA

FLoRA My courses Site administration

AU - Edit mode

The screenshot displays the FLoRA interface. On the left is a navigation menu with sections for 'Instructions', '1: Artificial Intelligence...', '2: Differentiation in Ed...', and '3: Scaffolding in Educa...'. The main area shows an 'Essay Writing' editor with a 'General Instructions' tab selected. The essay text discusses AI in education and scaffolding. A 'Save Essay' button is at the bottom left. On the right, a 'ChatGPT Tool' window is open, showing a blue message box with the question: 'Can you give more advice on how to improve the essay?' and a timestamp '18:20:01'. The response in a grey box provides two suggestions: 1. Expand on the role of AI in education with specific examples like personalized learning and adaptive assessments. 2. Elaborate on scaffolding techniques to support learners.

General Instructions

Essay Writing 236 words

Normal B I U x₂ x² data are
er and some
AI in Education. AI plays an important role in Ed...ding to optimize
Nowadays, the role of AI in education is limited...ding to optimize
needed to make AI work better. And the scaff...n of careful
more knowledgeable other or agent. In addit...vided into different
learning needs to acquire more knowledge... knowledge that
progress monitoring and adapting instructio... classroom will help
education, the three
help students and
we should learn
be paid more
education and

Save Essay

ChatGPT Tool

Can you give more advice on how to improve the essay?
18:20:01

Certainly! Here are some additional suggestions to improve your essay:

1. Expand on the role of AI in education: Discuss specific examples of how AI can be applied to learning, such as personalized learning, adaptive assessments, and intelligent tutoring systems. Explain how these applications can contribute to an innovative vision of education in 2035.
2. Elaborate on scaffolding to optimize learning: Provide examples of how scaffolding techniques can be used to support learners in acquiring new

Ask a question...

Essay marking tool

Rubric Score

[Dashboard](#)

Dashboard

Essay Analysis

Essay

Nowadays, the role of AI in education is limited in some tangible educational products. More and more data are needed to make AI work better. And the scaffolding is that the work is shared alone between the learner and some more knowledgeable other or agent. In addition, it also enables learning from the experience. Scaffolding to optimize learning needs to acquire more knowledge. Besides, as we all know, differentiation is a combination of careful progress monitoring and adapting instruction in response. By this, students or learners could be divided into different groups by their teacher according to their competence degree. In these groups, students can learn knowledge that they don't understand and make progress belonging to themselves. Differentiation practices in the classroom will help students in their group process.

Integration of three topics is very essential and all three are indispensable. In the future education, the three should complement each other. Respectively, there are great expectations for AI in education to help students and teachers work better. To facilitate our independent and appropriate use in education in the future, we should learn more on how the scaffolding component skills work and so on. Furthermore, differentiation should be paid more attention in education. Beyond that, the three should continue to innovate, so as to better serve the education and other industries in the future.

Result

CRITERIA	WORD/ERROR	RANKING	SCORE	DATE
Word count	227	51.85	2	2023-06-11
Basic writing skills	10	90.12	0	2023-06-11
Academic writing skills	11	91.36	0	2023-06-11
Originality	2	86.42	0	2023-06-11
Total		34.57	2	2023-06-11

Rubric

- Word count: The essay consists of 200 to 400 words; Yes (2 points), No (0 points)
- Basic writing skills: The essay is clearly a mature draft, has no low-level writing mistakes, such as missing texts, 'placeholders', messy typography, many spelling and grammatical errors; Yes (2 points), Partial (1 point) No (0 point)
- Academic writing skills: The writing of this essay should conform to the norms of academic writing, such as using appropriate logic structure, good flow and linkers usage, correct verbs and tenses and voices, consistent with academic writing style; Yes (4 points), Partial (1-3 point) No (0 point)
- Originality: Your writing should be your own opinion elaborated in your own words, not simply copy-pasted sentences from the material; Yes (2 points), Partial (1 point) No (0 point)

FOUNDATIONS – FLORA – **IMPACT** –
FINAL REMARKS

Present uses of FLoRA

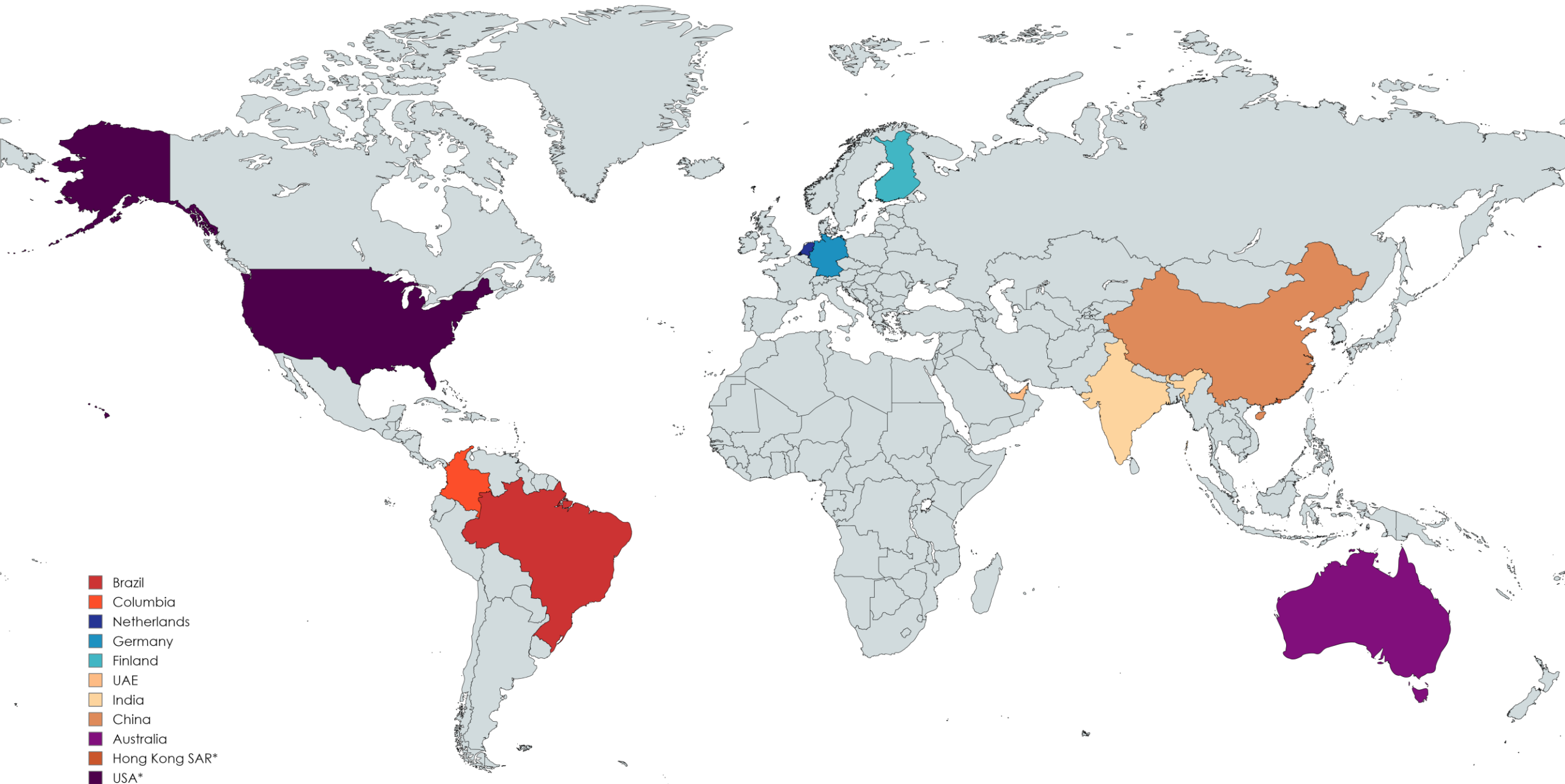
FLoRA goes to primary,
secondary and higher education

Present uses of FLoRA

FLoRA can be used in
multiple languages

Dutch, English, Finnish, German, Mandarin,
Spanish, and Portuguese already supported

Arabic in preparation



Present uses of FLoRA

Comprehension and writing tasks in
language, communications,
biology, IT, and data science



Learning strategies

Effective ways to track and influence
learning strategies with FLoRA

Track and influence learning strategies

✕

▾ **Instructions**[General Instructions](#)[Rubric](#)▾ **1: Artificial Intelligence**[1.1 What is artificial intelli...](#)[1.2 How does AI work?](#)[1.2.1 AI in practice](#)[1.2.2 Difference between...](#)[1.2.3 The role of the hum...](#)[1.3 Are machines smarter...](#)[1.4 The current limits and...](#)▾ **2: The School of the fut...**[2.1 Technology changing...](#)[2.2 Virtual Reality](#)

3: Future Learning / 1.2.1 AI in practice



PAGE

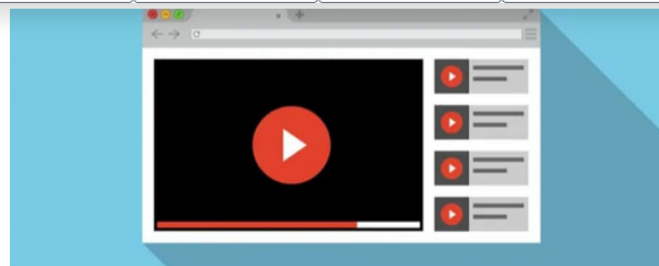
1.2.1 AI in practice

Page

[Settings](#)[More ▾](#)

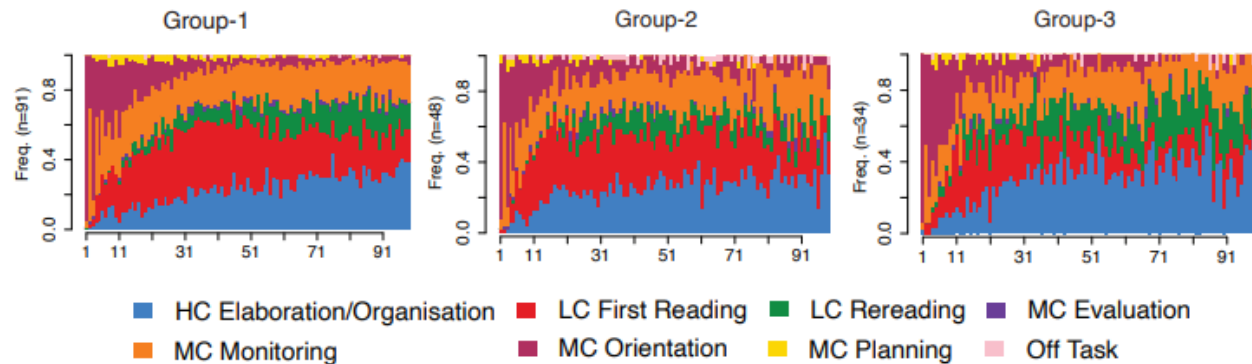
The function of AI may sound very abstract. However, the recommendations in a video stream service such as Netflix are based on an algorithm. Based on what you have watched, Netflix predicts what interests you and suggests more movies. In order to be able to make these recommendations, data is needed. In this case, data includes what you or others have watched. Another example could be creating chess program that can beat a human. You could prepare a program (not AI) in advance, which includes every possible strategy, decision, and rule. However, this program would be limited to what the programmers had told the system about effective strategies. So, how could AI help in creating this kind of chess program?

Takenote	important	useful	concept	confusing
----------	-----------	--------	---------	-----------

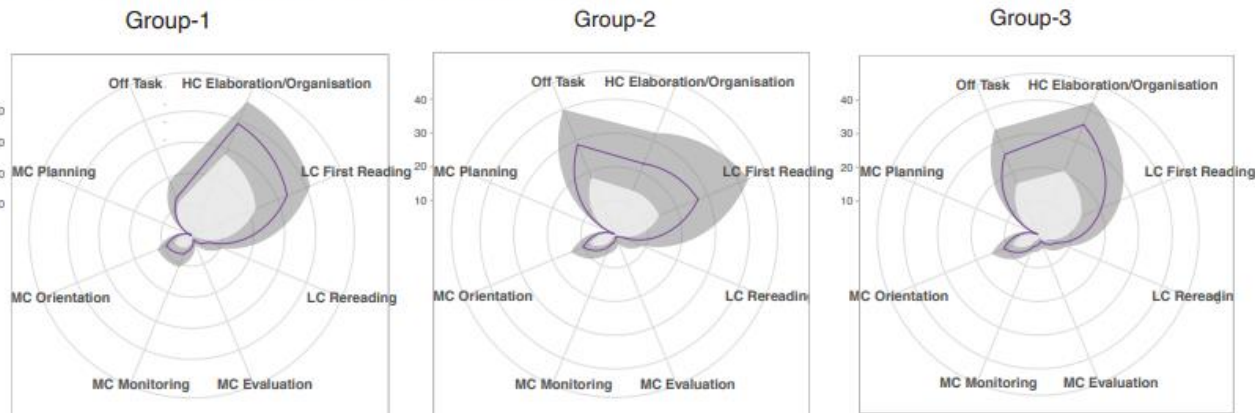


Learning strategies

A. State distribution plot of SRL processes



C. Distribution of time duration of SRL processes



Task: AI application futures

Secondary and higher education

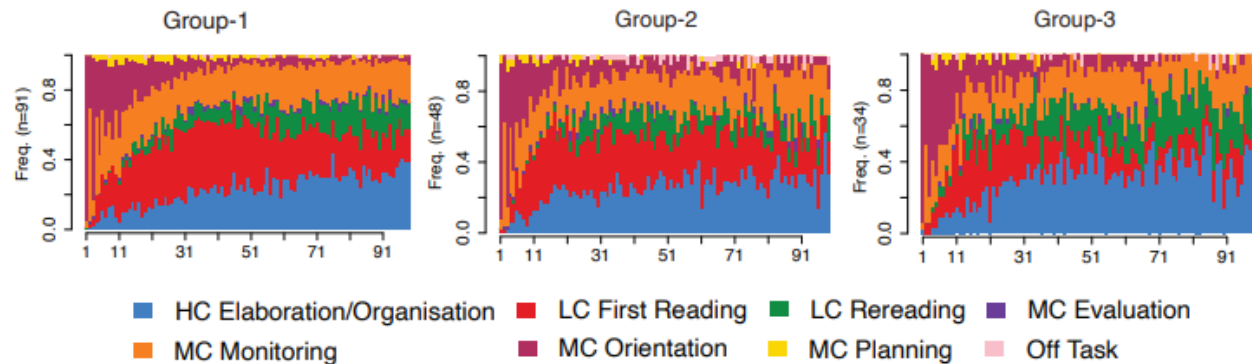
Group 1 - Read First, Write Next

Group 2 - Read and Write Simultaneously

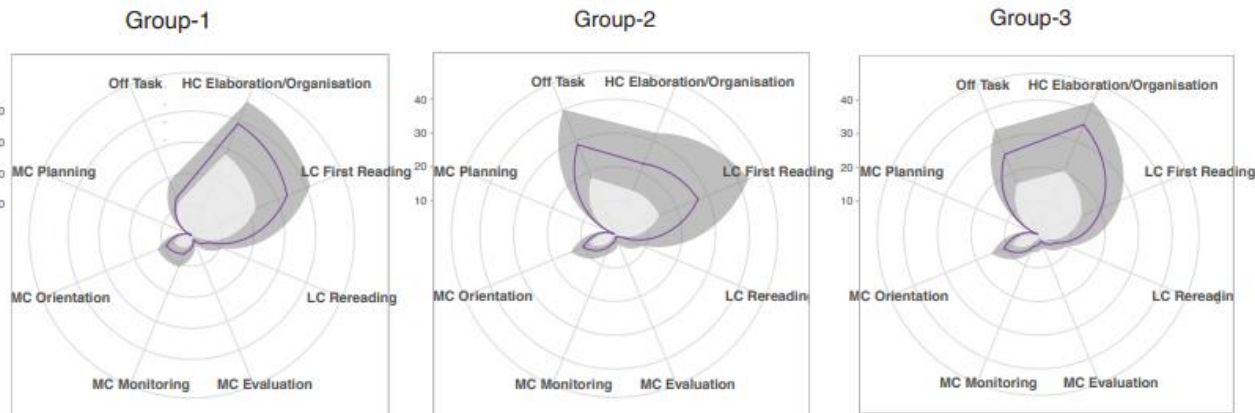
Group 3 - Write Intensively, Read Selectively

Learning strategies

A. State distribution plot of SRL processes



C. Distribution of time duration of SRL processes



Task: AI application futures

Secondary and higher education

Group 1 - Read First, Write Next*

Group 2 - Read and Write Simultaneously

Group 3 - Write Intensively, Read Selectively

***moderate to large effect sizes on essays**

Learning strategies

Scaffolding tool ×

S1 S2 S3 S4 S5

Accurate understanding of the content and requirements of literacy task is critical.

Based on your learning behaviour so far, we recommend the following steps:

- (a) Use table of content to get an overview and skim text
- (b) Check the essay rubric carefully
- (c) Make sure you understand the learning goals and instructions
- (d) Process information by taking notes.

Create Checklist

Moderate association
between scaffolding
and learning strategy

Learning strategies

GPT scaffolds go to schools

Biology, writing, and IT classes

Australia, Brazil, China, Colombia, Finland, India, and UAE

Learning strategies

x

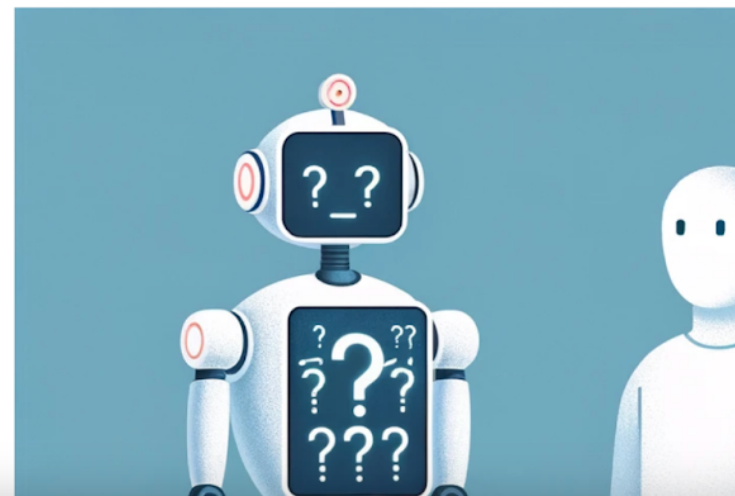
[1.1 What is artificial intellig...](#)[1.2 How does AI work?](#)[1.3 AI in practice](#)[1.4 Difference between AI ...](#)[1.5 The role of the human ...](#)[1.6 Are AI machines smart...](#)[1.7 The current limits and ...](#)v **2: The medicine in the f...**[2.1 Technology changing...](#)[2.2 AI and disease detecti...](#)[2.3 AI and mental illness](#)**[2.4 Patient's perspectives](#)**[2.5 Doctor's perspectives](#)[2.6 AI accuracy in medicine](#)[2.7 AI and data security in...](#)[2.8 How does hospitals in ...](#)

3: AI in Medicine C / 2.4 Patient's perspectives

2.4 Patient's perspectives

Page Settings More

Researchers at a US university found that many patients do not trust AI systems for several reasons. For example, an AI doctor (robot) may sometimes ask the patient to make her or him uncomfortable. Also, some patients may feel that AI systems



Instruction Panel

This will help you structure your essay effectively and cover all necessary points. Remember, planning your approach and being mindful of the time can enhance your performance. You're in control of your learning, and these strategies will empower you to produce a high-quality essay. Keep up the good work!

10:49:46

I see that you're aware of the time and tools available, which is great! However, it's important to also understand the task instructions and rubric. Your essay should discuss AI's concept, current use, and future integration in daily life and medicine. Use the reading material to gather information and examples. Start by defining AI, then discuss its current and potential future applications in medicine. Remember to write in your own words and include your own thoughts. You're doing well, just focus on incorporating the reading material into your essay. You've got this!

10:56:51

Learning strategies

FLORA My courses Site administration

Ag - Edit mode

The screenshot shows a Moodle course page for '3: AI in Medicine C / 2.4 Patient's perspectives'. The page title is '2.4 Patient's perspectives' with a duration of 19:46. A magnifying glass is positioned over a text box that contains the following text:

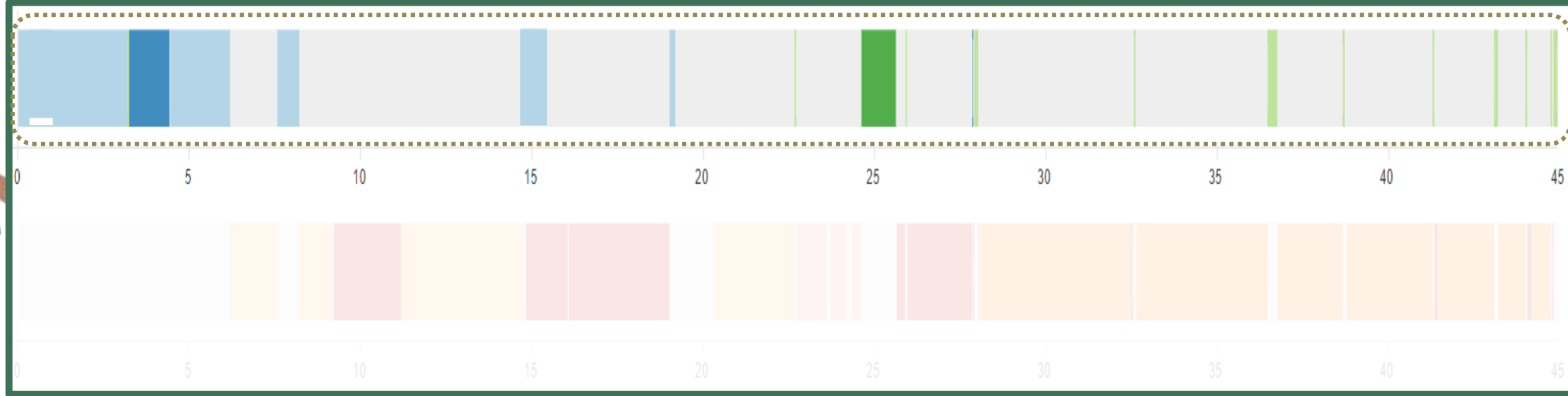
I see that you're aware of the time and tools available, which is great! However, it's important to also understand the task instructions and rubric. Your essay should discuss AI's concept, current use, and future integration in daily life and medicine. Use the reading material to gather information and examples. Start by defining AI, then discuss its current and potential future applications in medicine. Remember to write in your own words and include your own thoughts. You're doing well, just focus on incorporating the reading material into your essay. You've got this!

10:56:51

The page also features a sidebar with a list of course sections, including '2.4 Patient's perspectives' which is highlighted. The URL at the bottom is <https://www.floraengine.org/moodle/my/courses.php>.

Eden

"Starting with reading the instructions and careful planning is the key to success"



Metacognition

- 17% Orientation
- 0% Planning
- 2% Monitoring
- 1% Evaluation

Cognition

- 1% Reading
- 19% Rereading
- 55% Writing
- 0% Note-taking

 SRL Cycle

- Eden learns in one cycle, which starts by **checking the essay instructions to see what the task is about and planning.**
- Eden continues with the **evaluation** of their learning progress by **rechecking the instructions and the rubric**, Eden regularly **takes notes** and **checks the remaining time.**



Judgment of learning

Can AI help improve
learners' judgement of learning?

Learning content

Navigation menu

The screenshot shows a learning management system interface. On the left is a navigation menu with a 'Learning content' label. The main content area displays 'General Instructions' for a learning session about writing a vision essay. An 'Essay Writing' tool window is overlaid on the main content, showing a text editor with a 'Save Essay' button. A toolbar on the right side of the interface contains various tools: Notes Panel, Search Tool, Essay tool, Planner Tool, Dictionary Tool, Timer, Checklist Tool, ChatGPT Tool, and Ask Teacher Tool.

(Stage 1)

The Checklist Tool interface shows analysis results for two sentences. The first sentence is "Artificial intelligence has been rapidly developing for years, leading to the emergence of a wide variety of products." The tool identifies an error in variety and suggests the correct spelling is "variety." The second sentence is "However, limited extent in tangible AI-based educational products can be seen." The tool identifies an error in limited extent and suggests including an article "a" to make it grammatically correct. A note at the bottom states "This analysis may take around 5-10 min to process." and there is an "Analyse" button.

The ChatGPT Tool interface shows a user query: "could you give me some advice on the academic writing skills of my essay?" The response from ChatGPT provides suggestions to improve academic writing skills, such as using clear and concise language and avoiding unnecessary jargon. There is an input field at the bottom with a "Send" button.

The Ask Teacher Tool interface shows a chat conversation. The user has asked "could you give me some advice on the structure of my essay?". The teacher has responded with "hi". There is a status indicator at the top: "Connected to server: Teacher is typing..." and "Teacher online status: Teacher is typing...". There is an input field at the bottom with a "Send" button.

Learning content

Navigation menu

3: Future Learning_1 / General Instructions

PAGE
General Instructions

In this learning session, the goal is to write a vision essay that describes the future of education. Please describe, in 200 to 400 words, how you envision learning in a school in 2035.

Please consult the materials in this learning environment that provide information about three important topics for envisioning the future:

1. Artificial intelligence and its applications
2. What differentiation is and how it affects learning
3. The process of scaffolding a learning experience

The goal of the learning session is to write a vision essay about the future of education in a school in 2035.

At the end of the learning session, you will be asked to:

- explain the concepts of artificial intelligence and its applications
- explain how they affect learning
- apply them in the context of a school in 2035
- combine the concepts into a vision of the future of education

For more information about the topics, please refer to the materials in this learning environment.

Essay Writing 0 words

Normal B I U X₂ X² [List icons]

Write essay here...

Save Essay

- Notes Panel
 - Search Tool
 - Essay tool
 - Planner Tool
 - Dictionary Tool
 - Timer
 - Checklist Tool
 - ChatGPT Tool
 - Ask Teacher Tool
- (Stage 2)

(Stage 1)

CN

Revise essay by themselves

AI



HE



CL

Checklist Tool

Basic Academic Originality Integration and elaboration

Sentence Text: Artificial intelligence has been rapidly developing for years, leading to the emergence of a wide variety of products.
Error Position: variety
Error Correction: variety
Error Explanation: The correct spelling of the word is "variety."
Error Type: Spelling

Sentence Text: However, limited extent in tangible AI-based educational products can be seen.
Error Position: limited extent
Error Correction: a limited extent
Error Explanation: The phrase should include an article "a" to make it grammatically correct.

This analysis may take around 5-10 min to process. **Analyse**

ChatGPT Tool

could you give me some advice on the academic writing skills of my essay?
16:12:08

Certainly! Here are some suggestions to improve the academic writing skills in your essay:

1. Use clear and concise language: Aim for clarity in your writing by choosing precise words and avoiding unnecessary jargon or overly complex language. Make sure each sentence contributes to your overall argument.

Ask a question... **Send**

Ask Teacher Tool

Connected to server: ● Teacher is typing...
Teacher online status: ●

Hello
16:42:38

hi
16:42:41

could you give me some advice on the structure of my essay?
16:43:04

Ask a question... **Send**

Checklist Tool

Basic Academic Originality Integration and elaboration

Essay Sentence: Nowadays, the role of AI in education is left in some tangible educational products.
Integration Level: Remember and understanding

Essay Sentence: More and more data are needed to make AI work better.
Integration Level: Evaluate and create

Essay Sentence: And the scaffolding is that the work is shared alone between the learner and some more knowledgeable other or agent.
Integration Level: Evaluate and create

Essay Sentence: In addition, it also enables learning from the experience.
Integration Level: Apply and analyse

Essay Sentence: Scaffolding to optimize learning needs to acquire more knowledge.
Integration Level: Apply and analyse

This analysis may take around 5-10 min to process. **Analyse**

Challenge

Increased judgement of learning with
AI-powered tools for writing

Challenge

AI-powered tools have
inadvertent side effects on learning

External locus of control is increased
(i.e., learners blame AI-powered assessment for any issues)

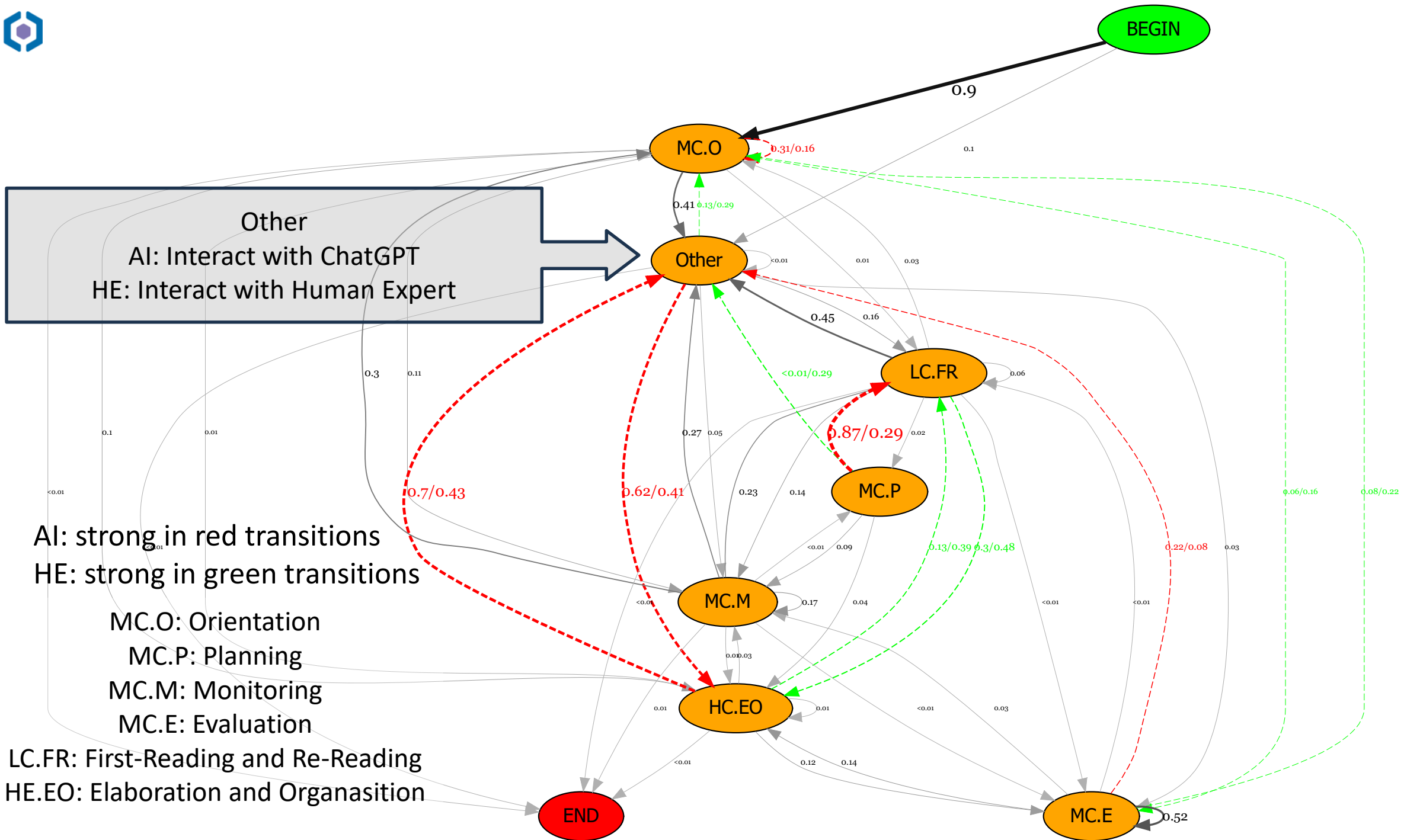
Writing performance

Unsurprisingly writing performance is improved when using ChatGPT

ChatGPT significantly higher essay scores than the other three

Metacognitive engagement

But, deeper engagement with content
when chatting with human teacher

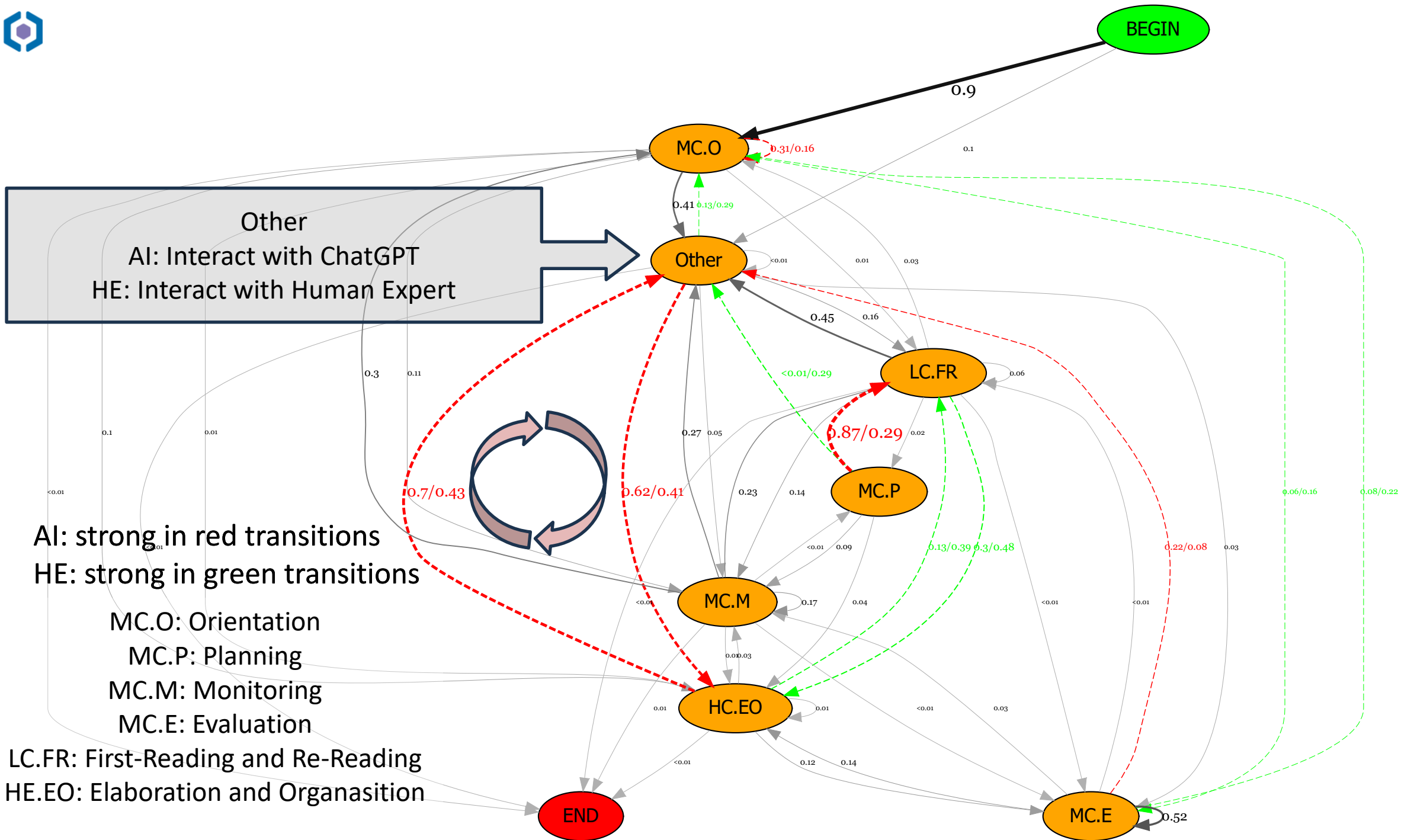


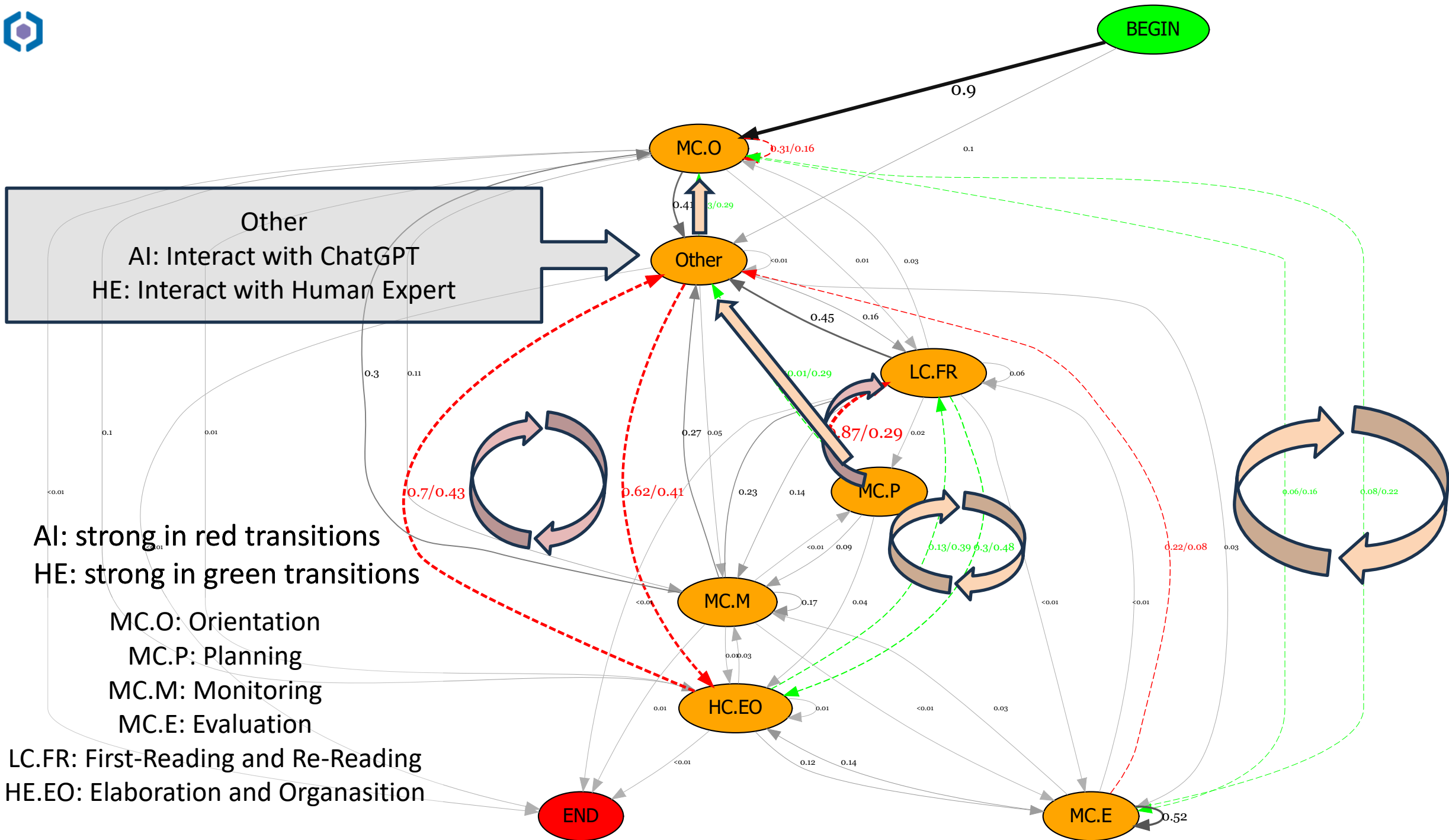
Other
AI: Interact with ChatGPT
HE: Interact with Human Expert

AI: strong in red transitions
HE: strong in green transitions

MC.O: Orientation
MC.P: Planning
MC.M: Monitoring
MC.E: Evaluation

LC.FR: First-Reading and Re-Reading
HE.EO: Elaboration and Organasition



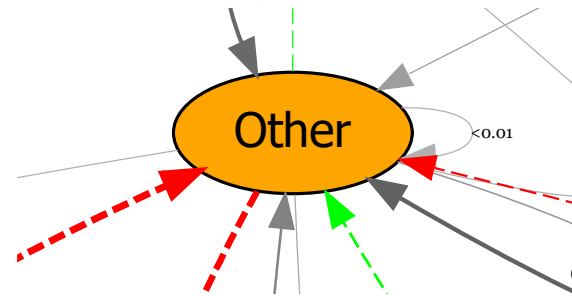


Metacognitive engagement

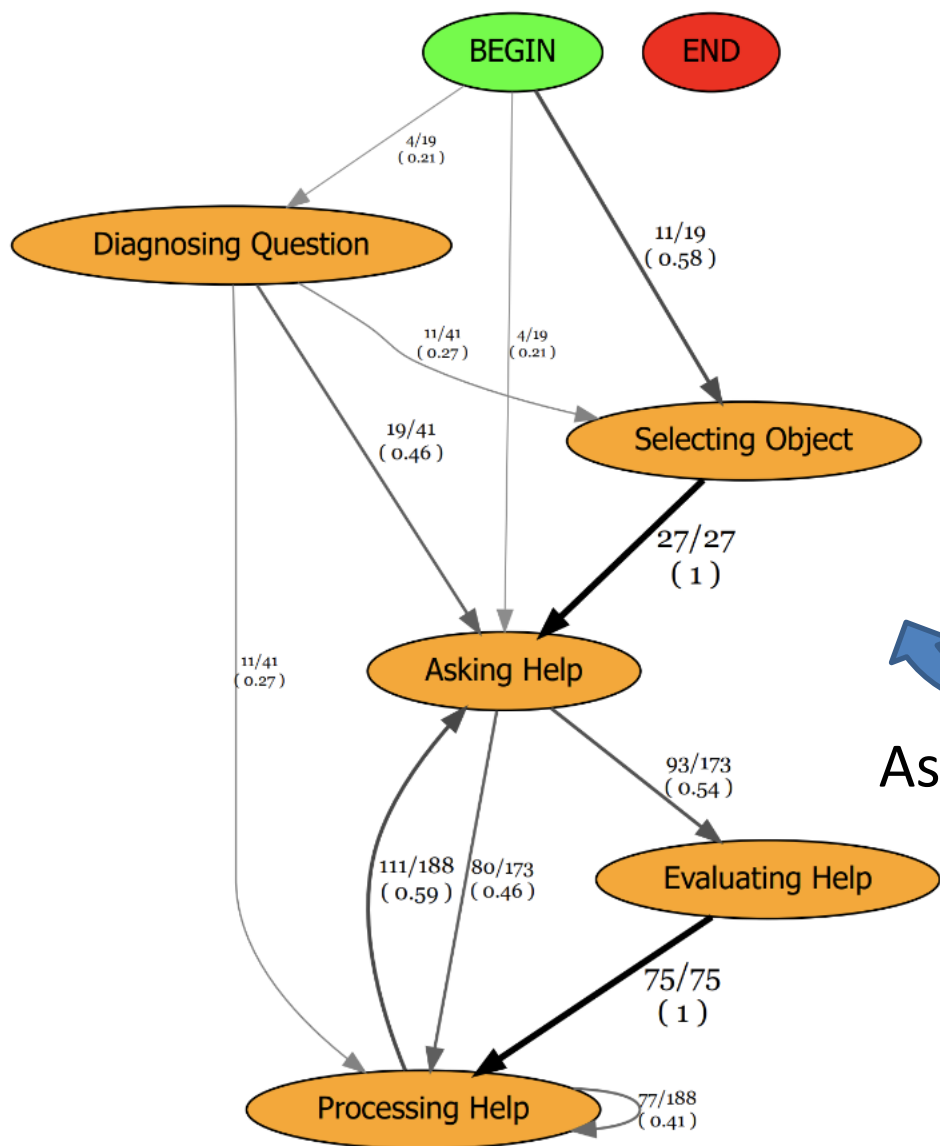
Are there any differences in
frequency of judgement of learning?

Help seeking behaviors

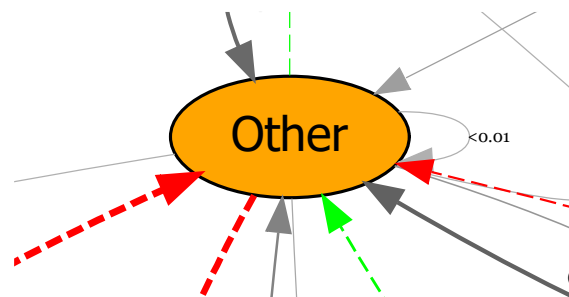
Opening this black box



Help seeking behaviors

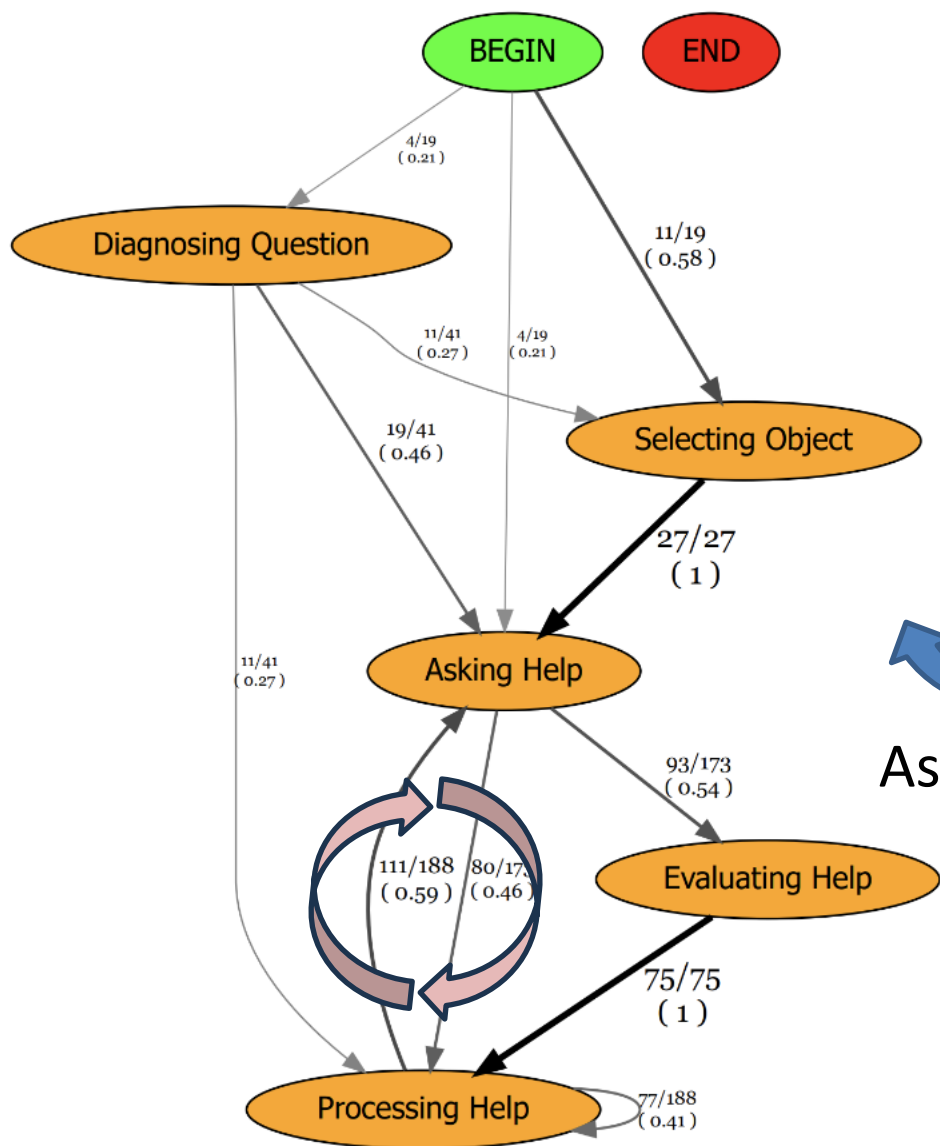


Opening this black box

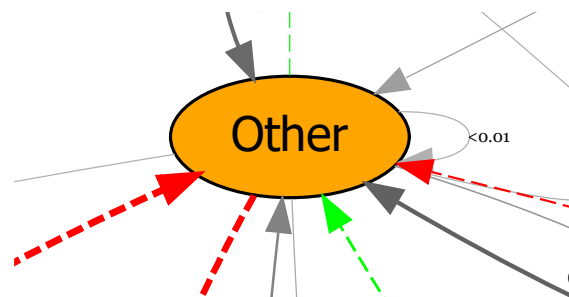


Ask ChatGPT

Help seeking behaviors

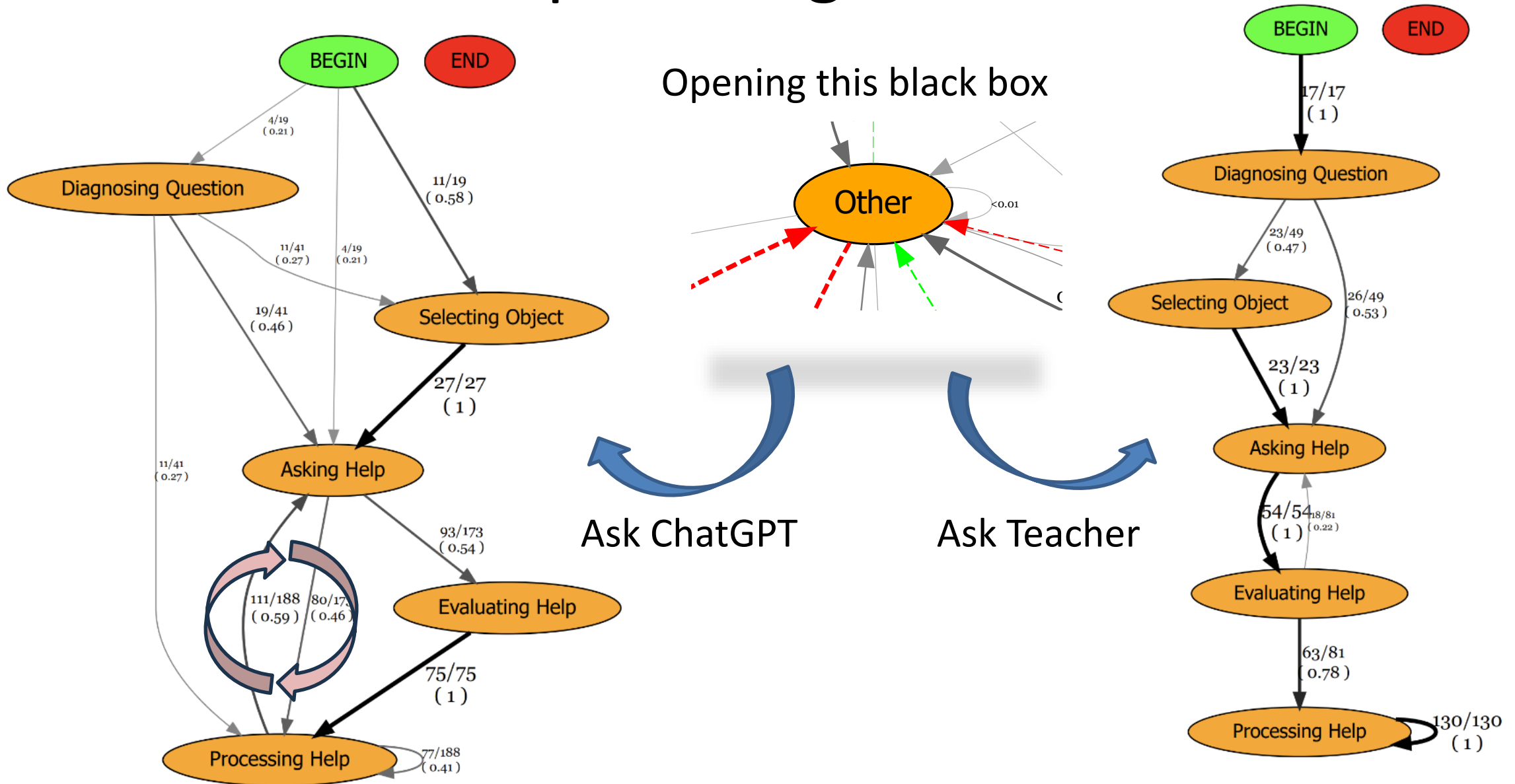


Opening this black box



Ask ChatGPT

Help seeking behaviors



Metacognitive engagement

What are long term implications of limited judgement of learning?

Unreliable information produced by GenAI

Challenge

AI-powered tools may have
inadvertent side effects on learning

Benefits deteriorate when AI-powered tools are removed

FINAL REMARKS



AI can have profound implications on learning to learn skills

Learning strategies and judgement of learning

AI is unlikely to go away and
we need to lead the change

Teachers play the central role in designing tasks for using AI tools

Scaffolding AI scaffolds

Longitudinal effects of AI on learning to
learn skills require future research



Empowering Learners in the AI Age

Building Skills for Self-Regulated Learning

Dragan Gašević
@dgasevic

March 25th, 2024
CITE, Faculty of Education
University of Hong Kong