AI Companions for Learning: **Friend or Foe?** A Reflective Perspective on Ethical and Legal Considerations

26 June 2024

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Enablers for responsible and ready graduates

AUTHENTIC LEARNING & ACADEMIC INTEGRITY

"an assessment requiring students to use the same competencies, or combinations of knowledge, skills, and attitudes, that they need to apply in the criterion situation in professional life"

Gedera, 2023

AUTHENTICITY IN EDUCATION

“a class of social system problems which are ill-formulated, where the information is confusing, where there are many clients and decision-makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing”

(Thomson et al., 2023)

A Proposal for the

DARTMOUTH SUMMER RESEARCH PROJECT ON ARTIFICIAL INTELLIGENCE

June 17 - Aug. 16

We propose that a 2 month, 10 man study of artificial intelligence be carried out during the summer of 1956 at Dartmouth College in Hanover, New Hampshire. The study is to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it. An attempt will be made to find how to make machines use language, form abstractions and concepts, solve kinds of problems now reserved for humans, and improve themselves. We think that a significant advance can be made in one or more of these problems if a carefully selected group of scientists work on it together for a summer.

The following are some aspects of the artificial intelligence problem:

1) Automatic Computers

If a machine can do a job, then an automatic calculator can be programmed to simulate the machine. The speeds and memory capacities of present computers may be insufficient to simulate many of the higher functions of the human brain, but the major obstacle is not lack of machine capacity, but our inability to write programs taking full advantage of what we have.

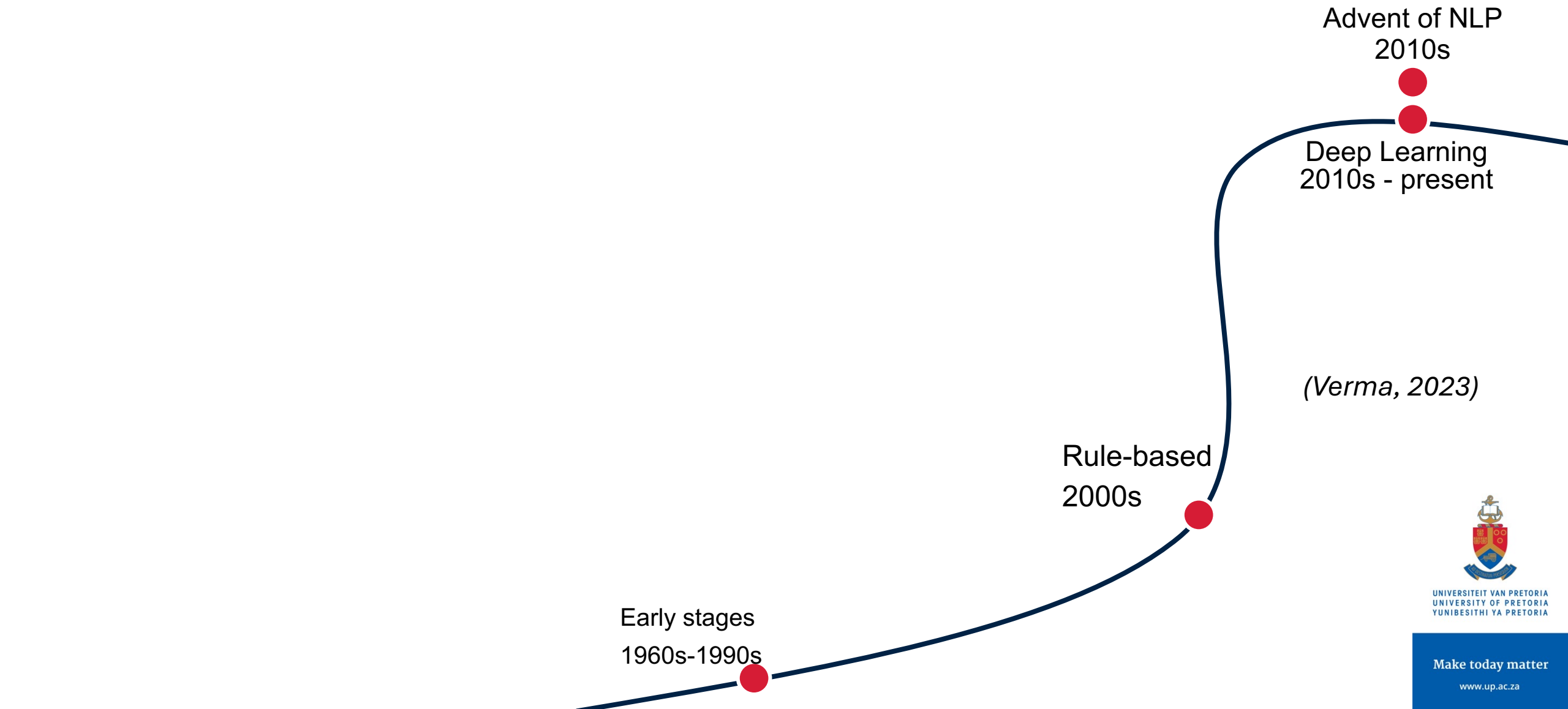
2) How Can a Computer be Programmed to Use a Language

It may be speculated that a large part of human thought consists of manipulating words according to rules of reasoning

2. How Can a Computer be Programmed to Use a Language

It may be speculated that a large part of human thought consists of manipulating words according to rules of reasoning and rules of conjecture. From this point of view, forming a generalization consists of admitting a new word and some rules whereby sentences containing it imply and are implied by others. This idea has never been very precisely formulated nor have examples been worked out.

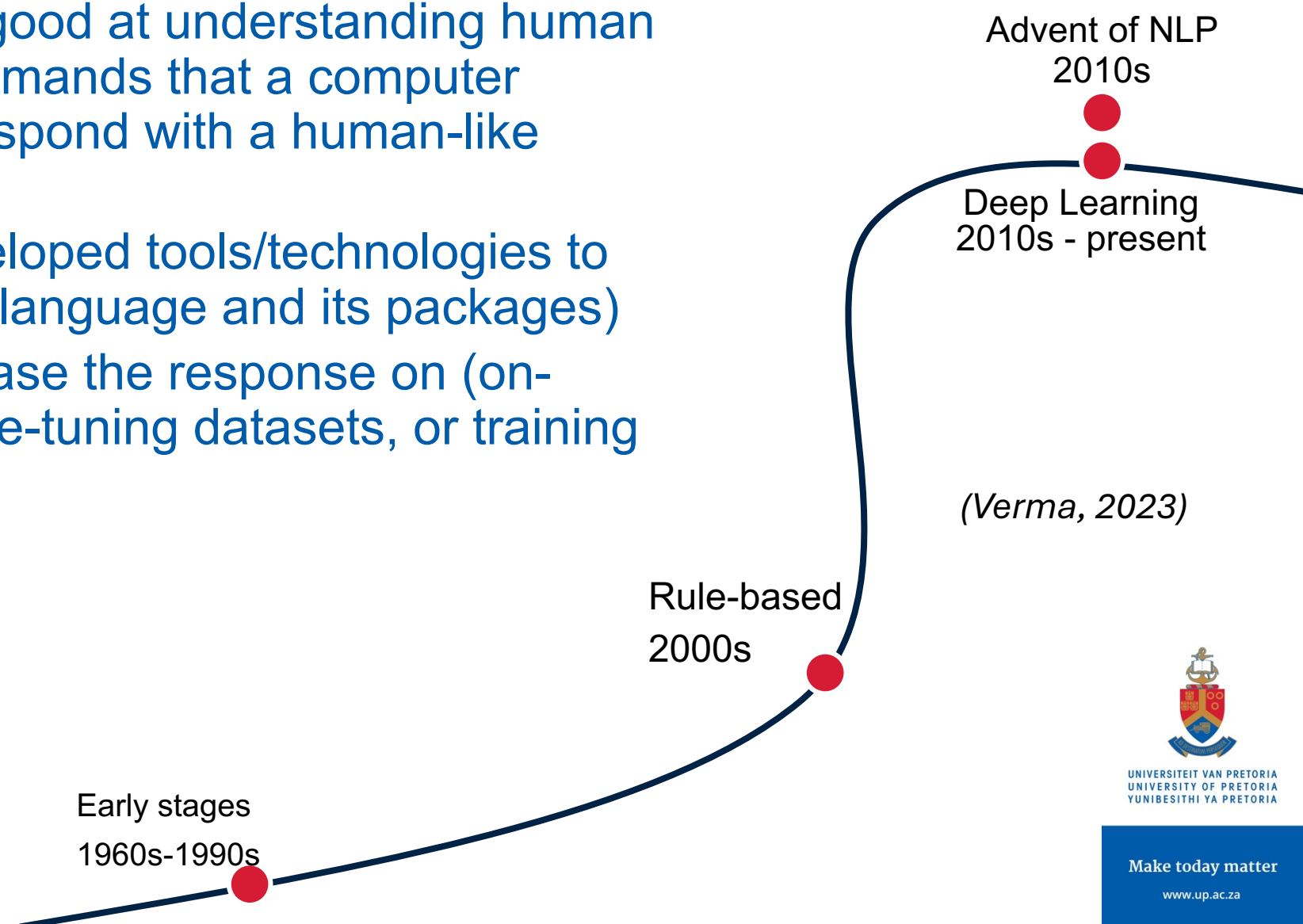
EVOLUTION OF CONVERSATIONAL AI



EVOLUTION OF CONVERSATIONAL AI

Conversational AI is only good at understanding human language to generate commands that a computer understands in order to respond with a human-like response.

- Uses previously developed tools/technologies to compute (i.e. python language and its packages)
- Uses given data to base the response on (on-demand datasets, fine-tuning datasets, or training datasets)



(Verma, 2023)

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IMPACT ON STUDENTS

"Homework Apocalypse"

Conversational AI outperforming humans in many ways (rightly so)

(Adams, 2024)

ADVANCED STUDENTS AND THE USE OF APIs

Making requests

You can paste the command below into your terminal to run your first API request. Make sure to replace `$OPENAI_API_KEY` with your secret API key. If you are using a legacy user key and you have multiple projects, you will also need to specify the Project Id. For improved security, we recommend transitioning to project based keys instead.

```
curl https://api.openai.com/v1/chat/completions \
  -H "Content-Type: application/json" \
  -H "Authorization: Bearer $OPENAI_API_KEY" \
  -d '{
    "model": "gpt-3.5-turbo",
    "messages": [{"role": "user", "content": "Say this is a test!"}],
    "temperature": 0.7
  }'
```

Source: https://platform.openai.com/docs/api-reference/making-requests

Advanced Students can use APIs to fine-tune models with:

- course material (context)
- personal previous written material (style of writing)

ETHICAL AND LEGAL DILEMMAS

General

1. Challenges in measuring and validating authenticity
2. Tracking of student engagement in the LMS impacted

Ethical

1. Plagiarism
2. Dishonesty

Legal

1. Institution's and lecturers IP used outside of the LMS and without authorisation
2. Books and other paid material made available to unauthorized students

HOW CAN WE …

ADVANCED AI LITERACY

Programmes

- Awareness (know)
- Competence (use)

AI Literacy Practice	Description	Student Look Fors
 **Algorithmic Thinking, Abstraction & Decomposition**	Develop and/or use a computer's ability to recognize data and create a prediction or perform an action based on both the situation and stored information without explicit human guidance.	• Training and/or prompting AI tools and systems • Defining procedures as algorithms • Testing and debugging • Breaking down problems into smaller parts
 **Data Analysis & Inference**	Consider the context of datasets, data visualizations, and data collection with criticality. Assess quality of training data for AI tools and leverage AI models and methods to collect, analyze, and visualize data.	• Determine quality (accuracy, completeness, validity, etc.) of dataset • Analyzing and organizing datasets • Describing patterns and relationships • Evaluating and deducing information
 **Data Privacy & Security**	Develop awareness of data privacy and security while fostering ownership and agency of how to protect data in AI-enabled systems. This includes the privacy and security of personal data collected by an AI system or tool and how that data is used.	• Identifying how personal information is being collected, used, and shared • Preventing tools from collecting data and/or deleting data that was collected • Investigating AI models and methods that were used to develop a tool • Identifying datasets that were used to train an AI model
 **Digital Communication & Expression**	Understand how AI Systems create synthetic content, evaluate synthetic AI creations, and consider ethical responsibilities when consuming, creating, and sharing AI-enabled products.	• Understand norms and best practices of use, development, and application AI systems • Evaluate outputs of AI-enabled system for appropriate tone, audience, and content • Responsibly engage in the consumption, creation, or sharing of AI-enabled products, including ethical sourcing and citation

(Mills et al., 2024)

Table 1: Roles of generative AI in learning and teaching (UNESCO 2023)

Role	Description	Example of implementation
Possibility engine	AI generates alternative ways of expressing an idea	Students write queries in AI tool and use the regenerate response function to examine alternative responses.
Socratic opponent	AI acts as an opponent to develop and argument	Students enter prompts into AI tool following the structure of a conversation or debate. Lecturers can ask students to use AI tool to prepare for discussions.
Collaboration coach	AI helps groups to research and solve problems together	Working in groups, students use AI tool to find out information to complete tasks and assignments.
Guide on the side	AI acts as a guide to navigate physical and conceptual spaces	Lecturers use AI tool to generate content for classes/courses (e.g., discussion questions) and advice on how to support students in learning specific concepts.
Personal tutor	AI tutors each student and gives immediate feedback on progress	AI tool provides personalised feedback to students based on information provided by students or lecturers (e.g., test scores).
Co-designer	AI assists throughout the design process	Lecturers ask AI tool for ideas about designing or updating a curriculum (e.g., rubrics for assessment) and/or focus on specific goals (e.g., how to make the curriculum more accessible).
Exploratorium	AI provides tools to play with, explore and interpret data	Lecturers provide basic information to students who write different queries in the AI tool to find out more. An AI tool can be used to support language learning.
Study buddy	AI helps the student reflect on learning material	Students explain their current level of understanding to the AI tool and ask for ways to help them study the material. AI tool can also be used to help students prepare for other tasks (e.g., job interviews).
Motivator	AI offers games and challenges to extend learning	Lecturers or students ask AI tool for ideas about how to extend students' learning after providing a summary of the current level of knowledge (e.g., quizzes, exercises).
Dynamic assessor	AI provides educators with a profile of each student's current knowledge	Students interact with AI tool in a tutorial-type dialogue and then ask AI tool to produce a summary of their current state of knowledge to share with their lecturer/for assessment.

THE USE OF CONVERSATIONAL AI IN EDUCATION

(University of Johannesburg, 2023)

ABOUT POLICY

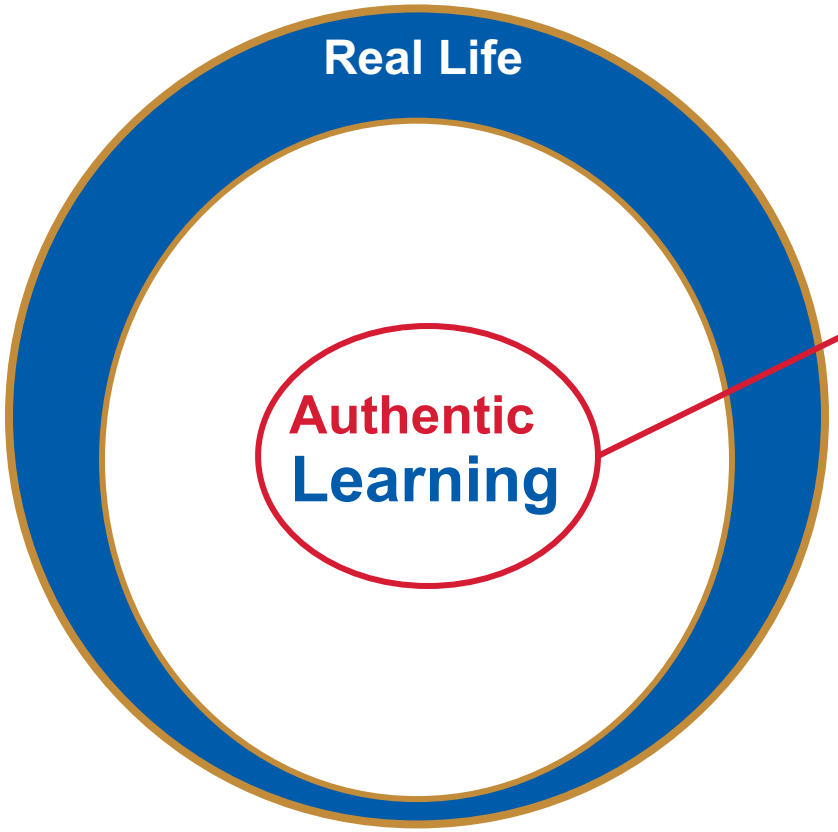
1. **Training**: Providing training for both students and teachers on effectively using and integrating generative AI technologies into teaching and learning practices.
2. **Ethical Use and Risk Management**: Developing policies and guidelines for ethical use and risk management associated with generative AI technologies.
3. **Incorporating AI without replacing human**: Incorporating AI technologies as supplementary tools to assist teachers and students, rather than as replacements for human interaction.
4. **Continuously Enhancing Holistic Competencies**: Encouraging the use of AI technologies to enhance specific skills, such as digital competence and time management, while ensuring that students continue to develop vital transferable skills.
5. **Fostering a transparent AI environment**: Fostering a transparent environment where students and teachers can openly discuss the benefits and concerns associated with using AI technologies in higher education.
6. **Data Privacy and security**: Ensuring data privacy and security while using AI technologies.

(Chan, 2023)

FRAMEWORK

Source:
https://digitalpromise.org/2024/06/18/ai-literacy-a-framework-to-understand-evaluate-and-use-emerging-technology/

AUTHENTIC LEARNING & ACADEMIC INTEGRITY



Is enabled by policy, frameworks, and informed and equipped practitioners who embrace technology and demands students to go beyond machine capabilities.

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THANK YOU

A special thanks to Prof Paul Prinsloo (UNISA) for tough questions that has been guiding my thinking and practice regarding ethical issues in education.

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