Harnessing AI to Transform Education: A Literature Review of Recent Publications

Enhancing Access, Engagement, and Innovation

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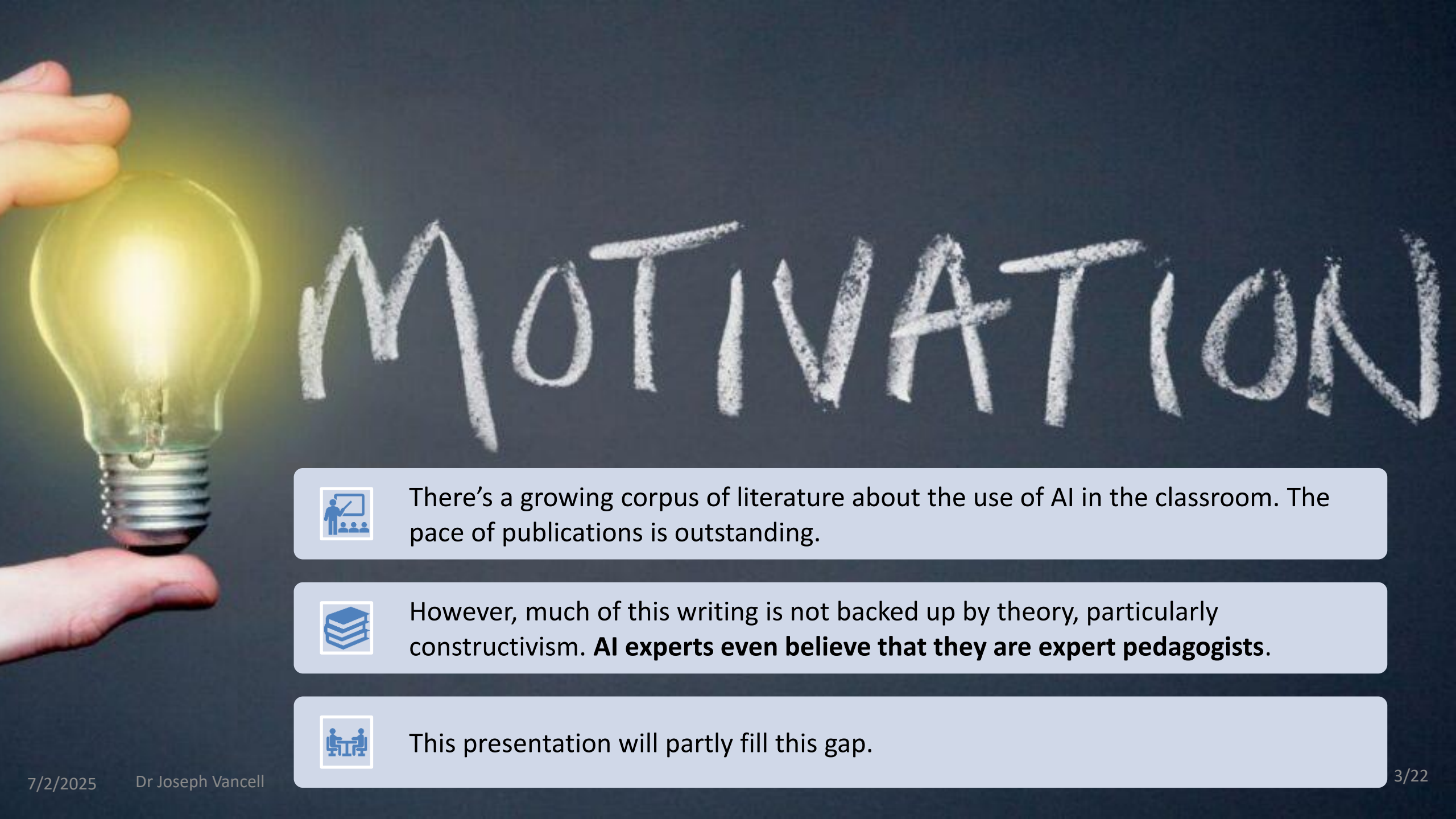
DISCLAIMER

I am no expert in AI.

My expertise lies in the use of technology, including AI, for enhancing teaching and learning.

I allow and ENCOURAGE the use of AI by students, at all levels of education (including primary, secondary, higher and adult education).

I do use AI in my own work. However, I am always conscious of its risks, use it prudently and ethically.



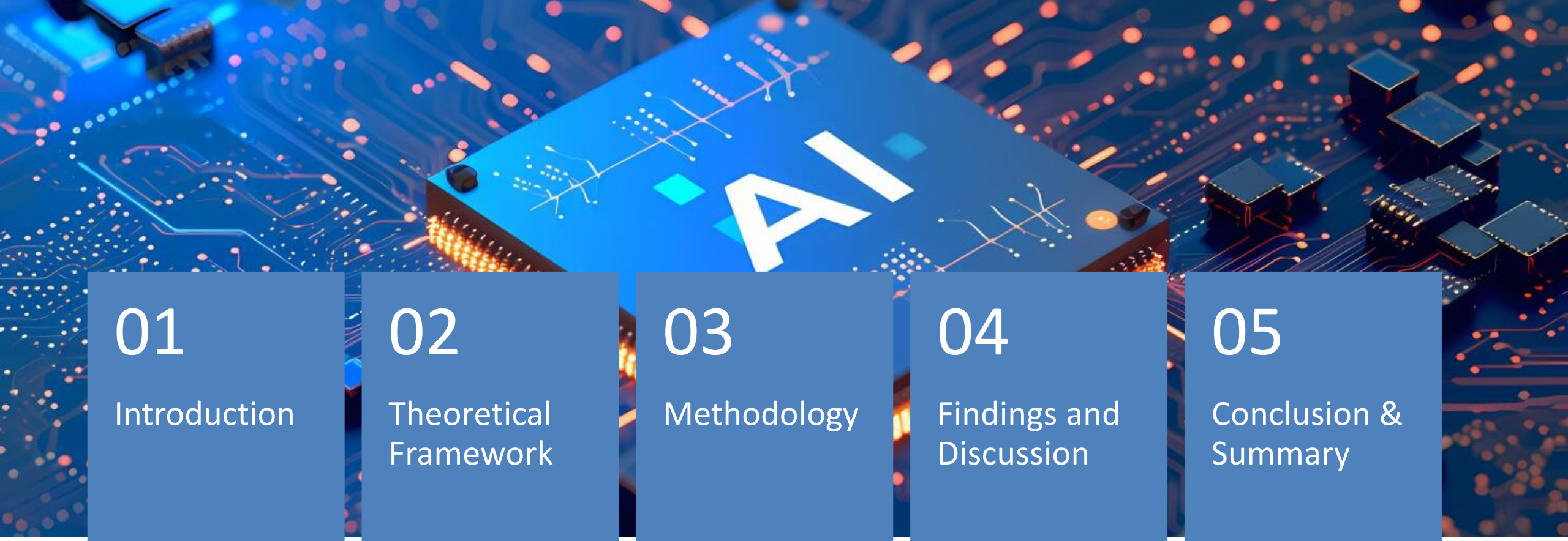
There's a growing corpus of literature about the use of AI in the classroom. The pace of publications is outstanding.

However, much of this writing is not backed up by theory, particularly constructivism. **AI experts even believe that they are expert pedagogists**.

This presentation will partly fill this gap.

Presentation Objectives

- Explore the use of AI, and particularly **GenAI**, in education
- Understand **constructivism** (Dewey) and its offshoot, **constructionism** (Papert)
- Review **benefits** and **concerns** of AI
- Recommend **best practices**



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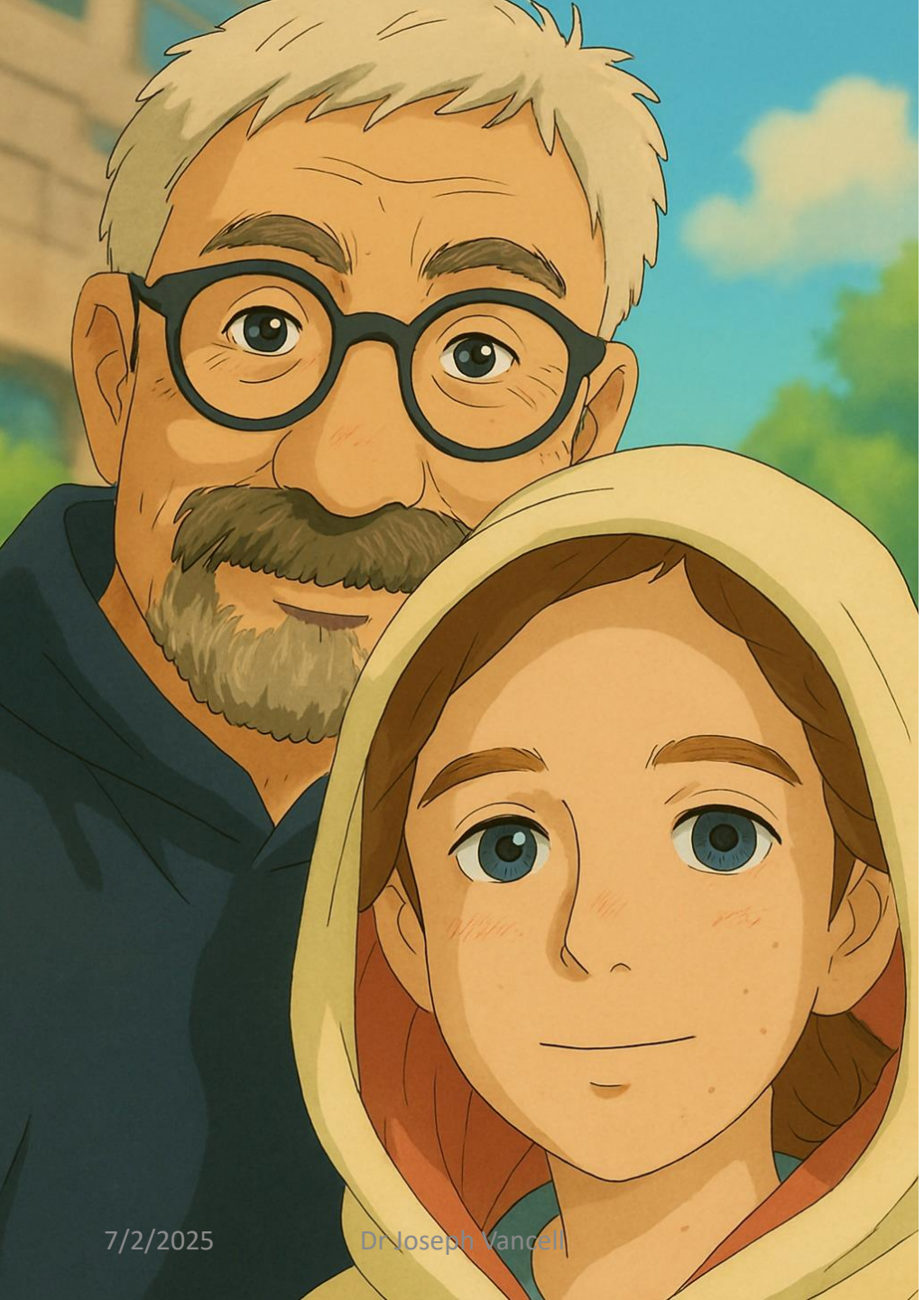


Introduction

- The literature reviewed agrees that:
  - AIEd is **transforming** learning
  - GenAI will not replace teachers
  - It boosts **personalisation** by creating tailored experiences for students
  - **Constructivism** and **constructionism** as theoretical lenses
  - New tools for teachers
  - Real-time formative assessment
  - Ethical concerns remain

Constructivism & Constructionism

- Learners build knowledge
- Teachers act as facilitators
- Hands-on creation helps learning – creates a learning community
- Promotes student agency
- According to **John Dewey**

"Knowledge is a construction, not a copy. It is an outcome of interaction between the individual and the environment."

Traditional Education

- Dewey challenged the traditional educational model of his time, which treated children as **passive recipients of knowledge**.
- **Empty receptacles**, according to Paulo Freire, ready to be filled with knowledge.
- Pedagogy was mainly the assimilation of knowledge not its critical creation and engagement.

Constructivism & Constructionism

- In Seymour Papert's words:

Constructionism - the N word as opposed to the V word – shares constructivism's connotation of learning as "**building knowledge structures**" irrespective of the circumstances of the learning. It then adds the idea that this happens especially felicitously in a context where the learner is consciously engaged in constructing a public entity, whether it's a sandcastle on the beach or a theory of the universe.

Methodology

Literature review: publications **2020 – 2025**

Major databases including EBSCOhost, Scopus, etc.

Used **Google Scholar** & **HyDi** (Hybrid Discovery, UM)

82 sources reviewed (out of 164 publications which mentioned AI in education)

Published between 2020 and early 2025

Thematic Content Analysis (grounded in the publications) using open coding and categorisation (selective coding) as in **constructivist GT methodology** - aided by Nvivo15 (Mac version)

Keywords: **AI, GenAI in education**

GenAI in Education

Creates content (text, code, media)

Promotes creativity & agency

Supports self-directed learning

Needs a **paradigm shift** in thinking and practice.

Potential of GenAI

Custom paths for students

Interactive feedback

Supports critical thinking

Aligns with inquiry learning

Enhances learner agency

Risks and Concerns

- Academic integrity issues
- Bias and misinformation
- Hallucinations in content
- Procrastination
- Dependence
- Over-reliance

Voices of Caution

- Naom Chomsky: **AI Undermines learning**
- **Plagiarism**
- Affects student outcomes
- **Limits critical engagement**

Noam Chomsky

- “I don’t think it [ChatGPT] has anything to do with education, except undermining it. ChatGPT is basically high-tech plagiarism…and a way of avoiding learning.”

Assessment worries and solutions

- Essays vulnerable to GenAI
- The risk increases in higher education where traditional assessments methods are stll prevalent.
- Shift to formative methods
- Increase assessment practices that are inspired by constructivist and constructionist pedagogies, including group work
- Ensure authentic assessment

"AI presents a dual capacity: an immense potential to enhance learning experiences and pedagogical practices, alongside significant challenges that necessitate careful consideration and proactive strategies."

Discussion

- AI offers major pedagogic benefits
- But requires a paradigm shift in thinking and pedagogy
- Supports constructivism (and constructionism)
- Frees teachers for deeper tasks

Educator's Evolving Role

- From content deliverer to guide (facilitator)
- Designer of learning experiences
- Foster ethical tech use
- Ongoing professional training

Ethical Considerations

- Privacy and bias concerns
- Need strong safeguards
- Equitable access is key
- Responsible integration

Key insights

There must be a move from away from the BANKING (Paulo Freire) model of traditional education where the passive consumption knowledge is prevalent.

The effective integration of AI in education is not merely a technological upgrade.

AI must be consciously used to enhance teaching and learning.

Assessment must change from summative to formative. It must be constuctivist-aligned.

Although the profession is not at stake, the teacher must move beyond mere content delivery.

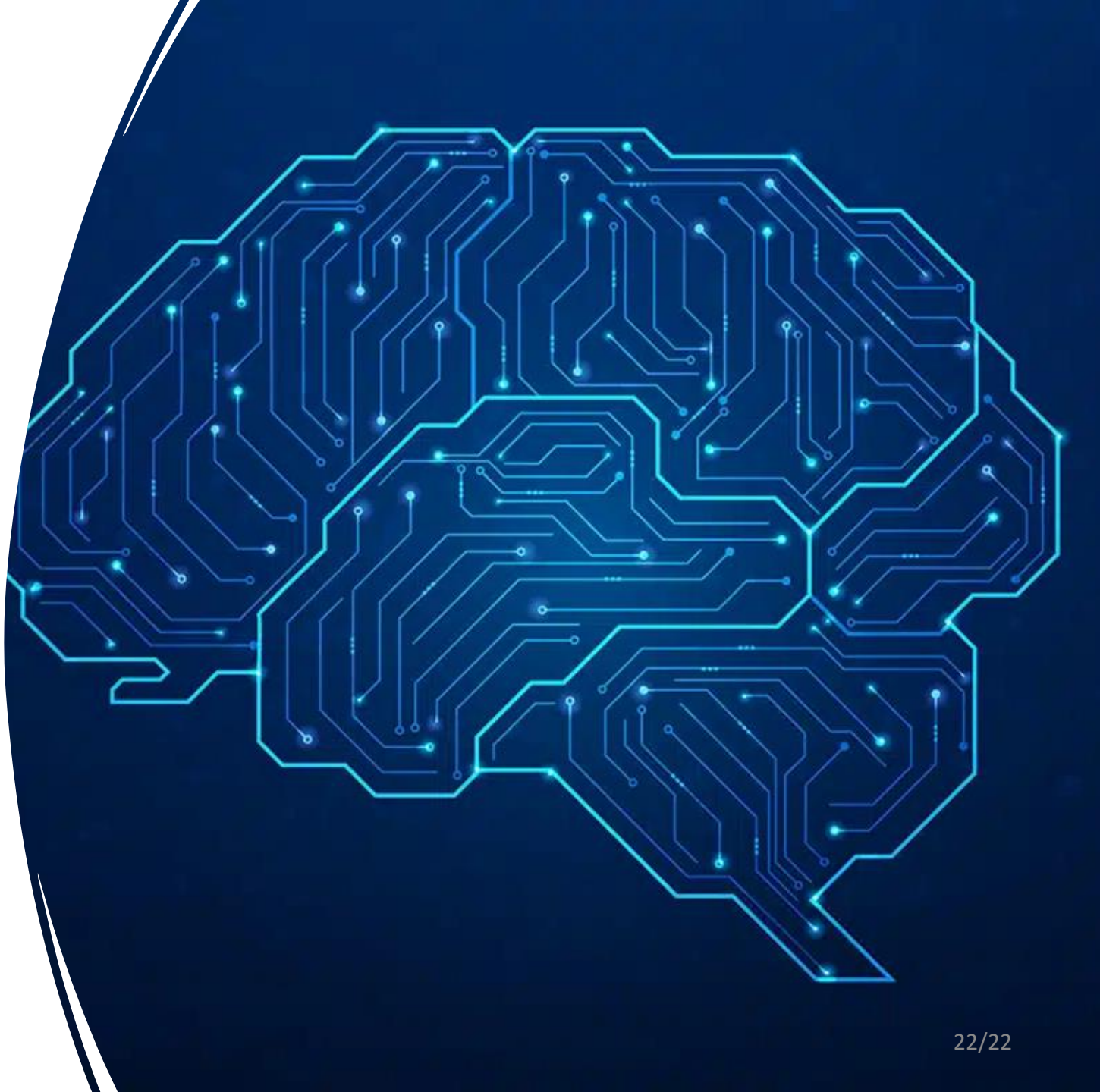
This necessitates comprehensive teacher training and ongoing professional development.

Conclusion

Enhance	Empower	Support	Ethics
AI must enhance not replace teaching practices	Empower students and make them agents of their own learning	Support critical inquiry	Ethics must lead adoption

Summary

- AI transforms education
- Constructivist tools support learning
- Ethics, training, equity are essential
- AI helps the teacher to prepare students for a world in which AI is becoming more pervasive.



Thank You
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