

Inteligência Aumentada:

Agentes Pedagógicos e à parceria entre humanos e máquinas para aprimorar nossas capacidades de ensinar e aprender.

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Membro do Comitê executivo da **Sociedade Internacional de Inteligência Artificial na Educação**
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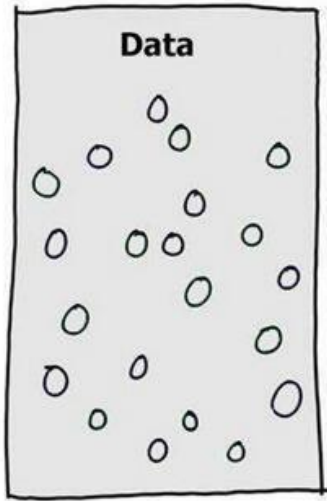
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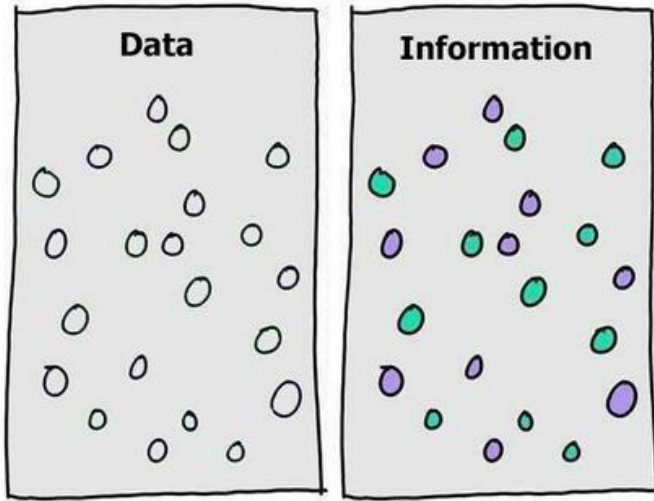


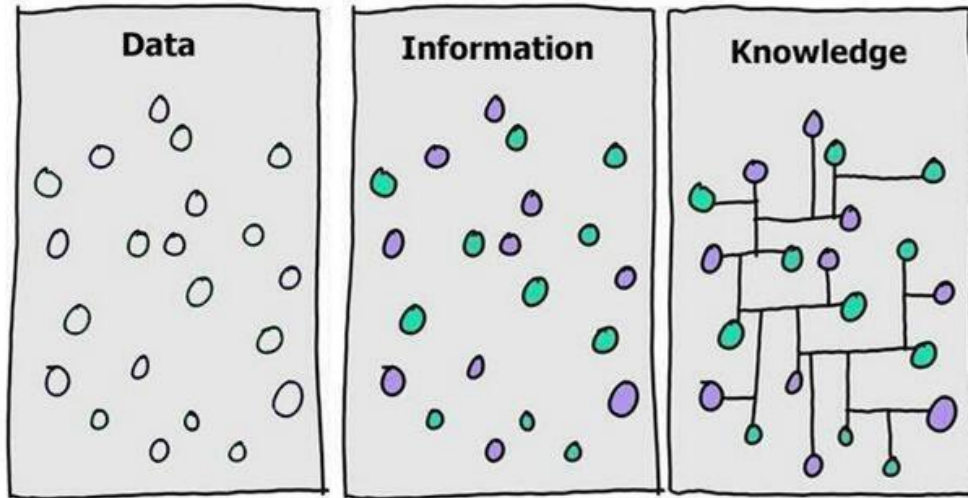
GRADUATE SCHOOL
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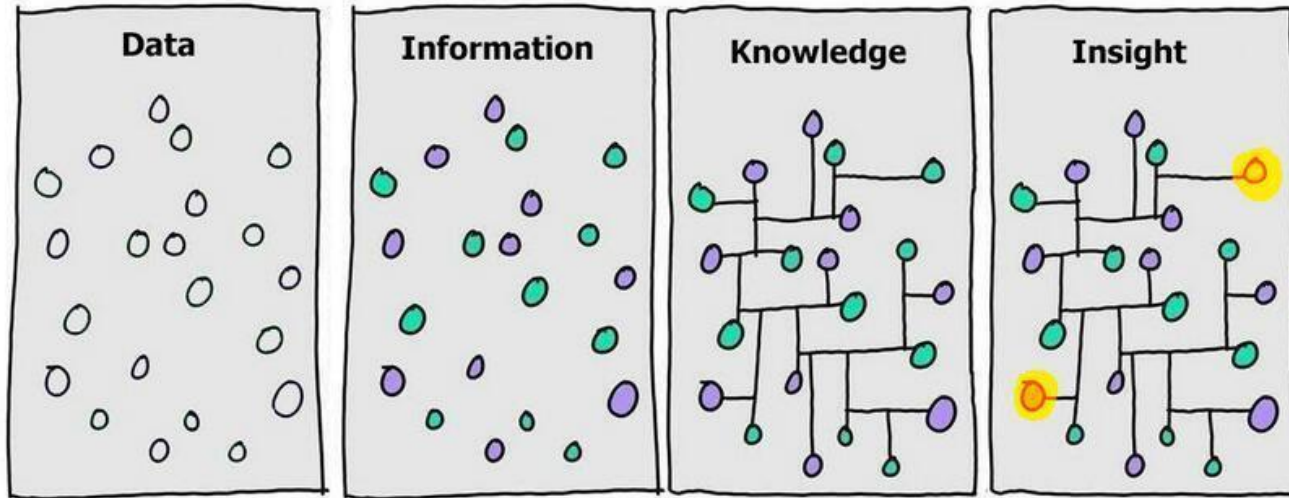
Por que o chatGPT é tão atrativo?

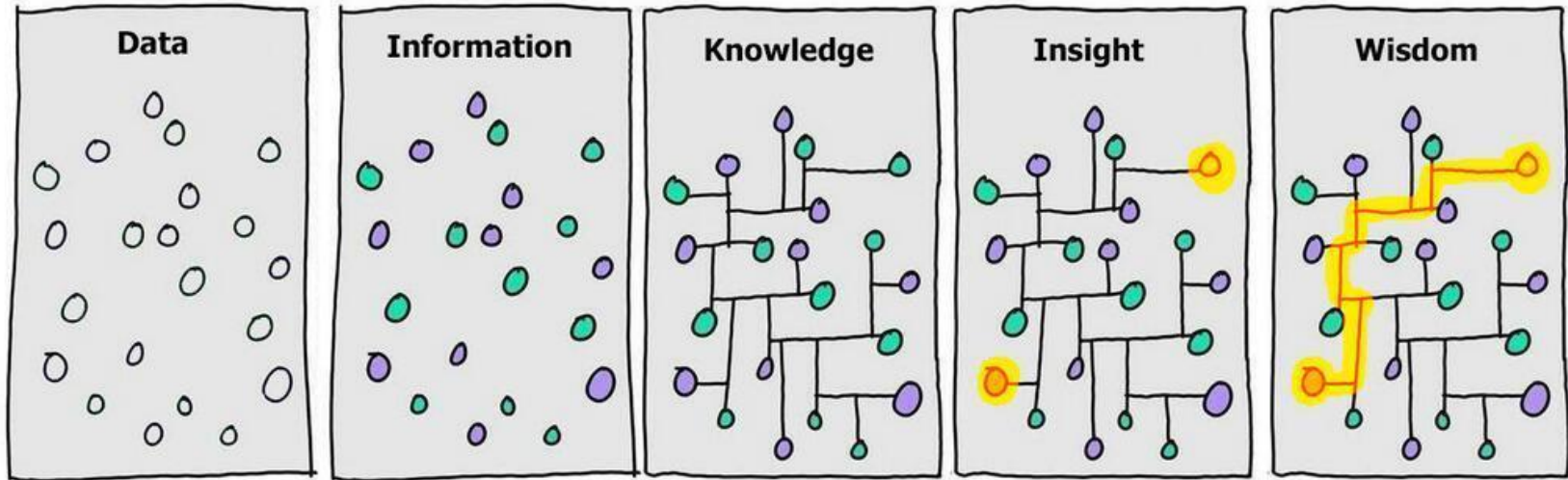
**Nós, humanos, precisamos de ajuda pra
aumentar nossas capacidades de viver
na sociedade do conhecimento**



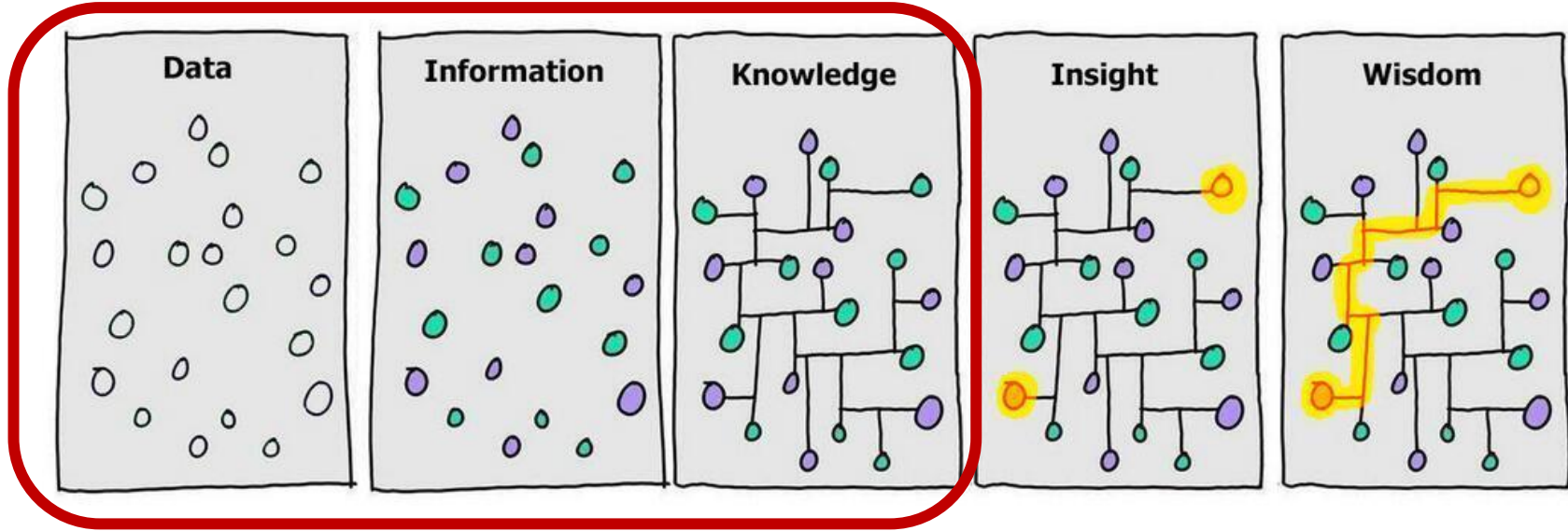








Conhecimento



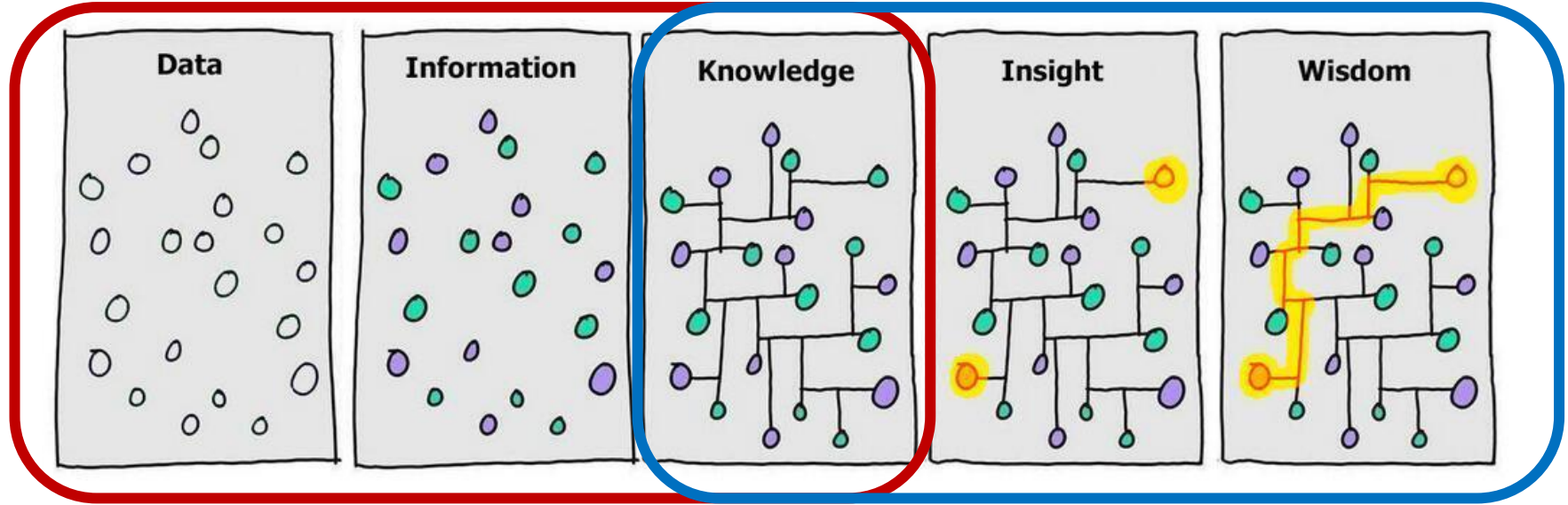
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Knowledge discovery in databases (KDD)

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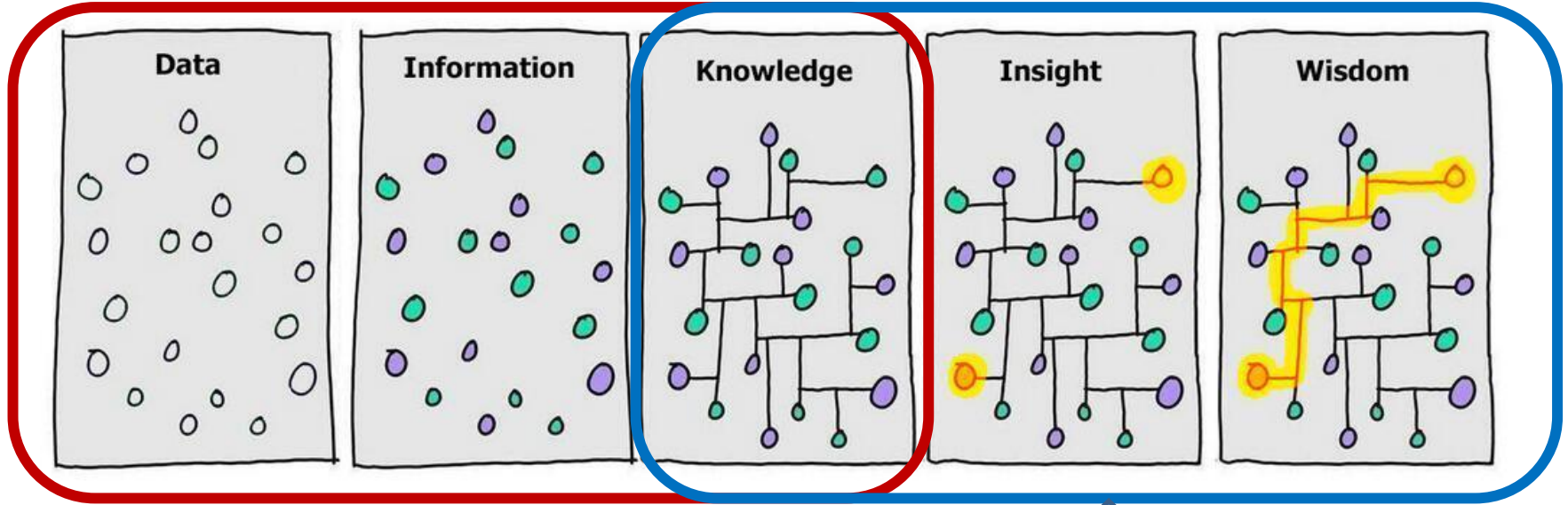
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Conhecimento

Pessoas



ChatGPT?

Knowledge discovery in databases (KDD)

Source: <https://www.theifactory.com/news/gaining-wisdom-from-data/>

**No contexto educacional,
as pesquisas em agentes
virtuais já estão sendo
realizadas a pelo menos 3
décadas**

Os agentes pedagógicos (agentes virtuais, como o ChatGPT, focados na aprendizagem) são uma das áreas de pesquisa em AI na Educação

Agentes pedagógicos, com o objetivo de aumentar nossas capacidades, pavimentam o caminho para uma **parceria simbiótica** entre **humanos e computadores** para ajudar professores e alunos a **aprimorar suas capacidades**.

(Isotani & Moeller, 2020)



Lifelike Pedagogical Agents for Mixed-Initiative Problem Solving in Constructivist Learning Environments

JAMES C. LESTER¹, BRIAN A. STONE² and GARY D. STELLING¹

¹*Department of Computer Science, Engineering Graduate Research Center, North Carolina State University, Raleigh, NC 27695-7534, USA; e-mail: lester,gdstelli@csc.ncsu.edu*

²*Department of Computer Science, North Carolina State University, Raleigh, NC 27695-8206, USA; e-mail: bastone@eos.ncsu.edu*

(Received 27 November 1997; accepted in revised form 12 May 1998)

Abstract. Mixed-initiative problem solving lies at the heart of knowledge-based learning environments. While learners are actively engaged in problem-solving activities, learning environments should monitor their progress and provide them with feedback in a manner that contributes to achieving the twin goals of learning effectiveness and learning efficiency. Mixed-initiative interactions are particularly critical for *constructivist* learning environments in which learners participate in active problem solving. We have recently begun to see the emergence of believable agents with lifelike qualities. Featured prominently in constructivist learning environments, *lifelike pedagogical agents* could couple key feedback functionalities with a strong visual presence by observing learners' progress and providing them with visually contextualized advice during mixed-initiative problem solving. For the past three years, we have been engaged in a large-scale research program on lifelike pedagogical agents and their role in constructivist learning environments. In the resulting computational framework, lifelike pedagogical agents are specified by

A Social-Cognitive Framework for Pedagogical Agents as Learning Companions

□ Yanghee Kim and Amy L. Baylor

Teaching and learning are highly social activities. Seminal psychologists such as Vygotsky, Piaget, and Bandura have theorized that social interaction is a key mechanism in the process of learning and development. In particular, the benefits of peer interaction for learning and motivation in classrooms have been broadly demonstrated through empirical studies. Hence, it would be valuable if computer-based

Effectiveness of Multimedia Pedagogical Agents Predicted by Diverse Theories: a Meta-Analysis

Juan C. Castro-Alonso¹  • Rachel M. Wong² • Olusola O. Adesope² • Fred Paas^{3,4}

Accepted: 25 November 2020 / Published online: 3 January 2021

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Abstract

Multimedia pedagogical agents help learning in multimedia environments through motion, and voice. This meta-analysis examined the effectiveness of multimedia pedagogical agents predicted by diverse theories.

Our meta-analysis of 32 effect sizes ($N = 2104$) revealed a small overall effect ($g^+ = 0.20$), showing that learning with multimedia pedagogical agents was more effective than learning without these agents. As predicted by the redundancy effect of cognitive load theory and the coherence principle of cognitive theory of multimedia learning, 2D agents ($g^+ = 0.38$) tended to be more effective than 3D agents ($g^+ = 0.11$). As predicted by the computers are social actors hypothesis, most of the agents' characteristics, including nonverbal communication, motion, and voice, appeared not to moderate their effectiveness. We conclude that multimedia pedagogical agents help learning through multimedia, and that students may be able to learn similarly from different types of agents.

actors, social agency theory, uncanny valley, and the action observation network. Our meta-analysis of 32 effect sizes ($N = 2104$) revealed a small overall effect ($g^+ = 0.20$), showing that learning with multimedia pedagogical agents was more effective than learning without these agents. As predicted by the redundancy effect of cognitive load theory and the coherence principle of cognitive theory of multimedia learning, 2D agents ($g^+ = 0.38$) tended to be more effective than 3D agents ($g^+ = 0.11$). As predicted by the computers are social actors hypothesis, most of the agents' characteristics, including nonverbal communication, motion, and voice, appeared not to moderate their effectiveness. We conclude that multimedia pedagogical agents help learning through multimedia, and that students may be able to learn similarly from different types of agents.

**Agentes pedagógicos oferecem suporte
cognitivo, criativo, social e emocional
(na direção do bem estar)**



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Equations with parentheses

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$$3 - 2(9 + 2m) = m$$

$$m = \text{ }$$

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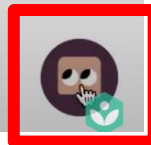
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Equations with parentheses

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 AI power



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I'm here to help you with this exercise. Here are a few ideas for things you can ask me:

[Give me a hint](#)

[Try a similar example](#)

[Why should I care about learning this?](#)

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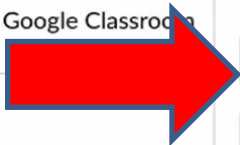
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Equations with parentheses

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[Tell me the answer!](#)

Oh, I see you're eager to find the answer! 😊 But remember, I'm here to help you learn how to solve it on your own. Let's start by looking at the equation:

$$3 - 2(9 + 2m) = m$$

What do you think the first step should be?

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Equations with parentheses

CCSS.Math: [8.EE.C.7](#), [8.EE.C.7b](#)  Google Classroom

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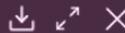
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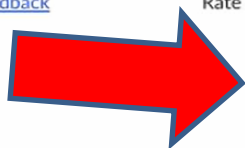
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$$3 - 18 + 2m = m$$

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Equations with parentheses

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$$3 - 2(9 + 2m) = m$$

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$$3 - 18 + 2m = m$$

Oops! It looks like there's a small mistake when you distributed the -2 inside the parentheses. 🙄
Make sure you distribute the -2 to both terms in the parentheses.

The correct distribution would be:

$$3 - 2(9) - 2(2m) = m$$

Try again and let me know if you need help. You got this! 💪

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Equations with parentheses

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$3 - 18 - 4m = m$

Great job! You distributed the -2 correctly this time. 😊 Now, you have:

$3 - 18 - 4m = m$

What do you think the next step should be to solve for m ?

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Equations with parentheses

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**Khanmigo** beta



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Why do I need to learn this?

What are your interests or goals? Knowing that will help me explain how this math concept might be relevant to you! 😊

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I really love soccer!

Great! In soccer, math can be quite useful, especially when analyzing player performance, game statistics, and team strategies. Understanding equations like the one in the video can help you grasp more advanced math concepts

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Great! In soccer, math can be quite useful, especially when analyzing player performance, game statistics, and team strategies. Understanding equations like the one in the video can help you grasp more advanced math concepts, which can be applied to soccer analytics, predicting player movements, and even optimizing training routines. So, learning this math concept can enhance your understanding and appreciation of the beautiful game! ⚽😊

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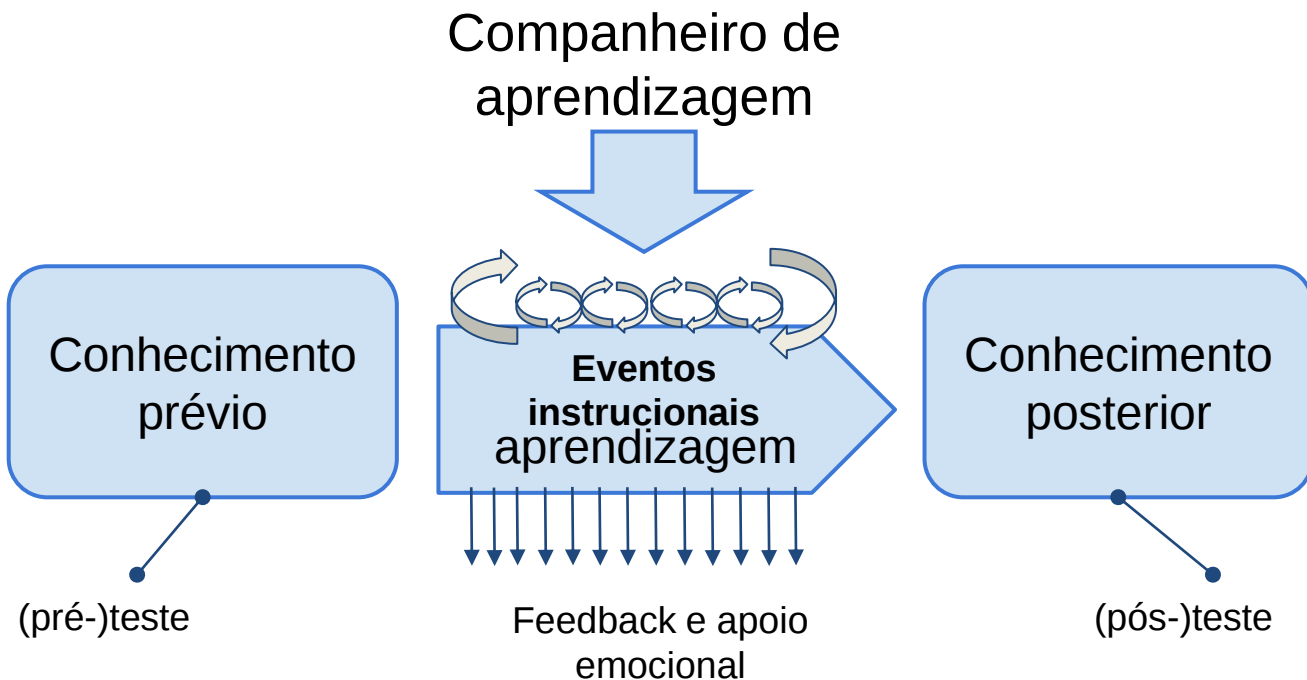
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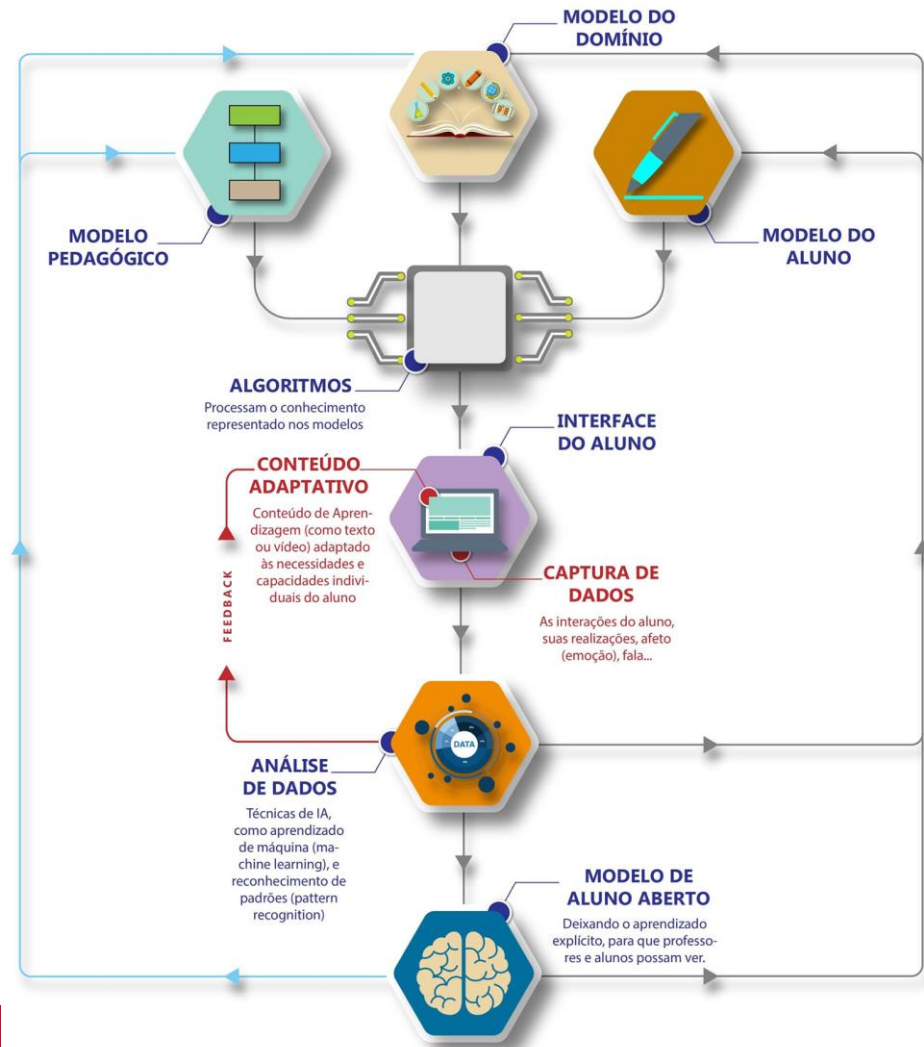
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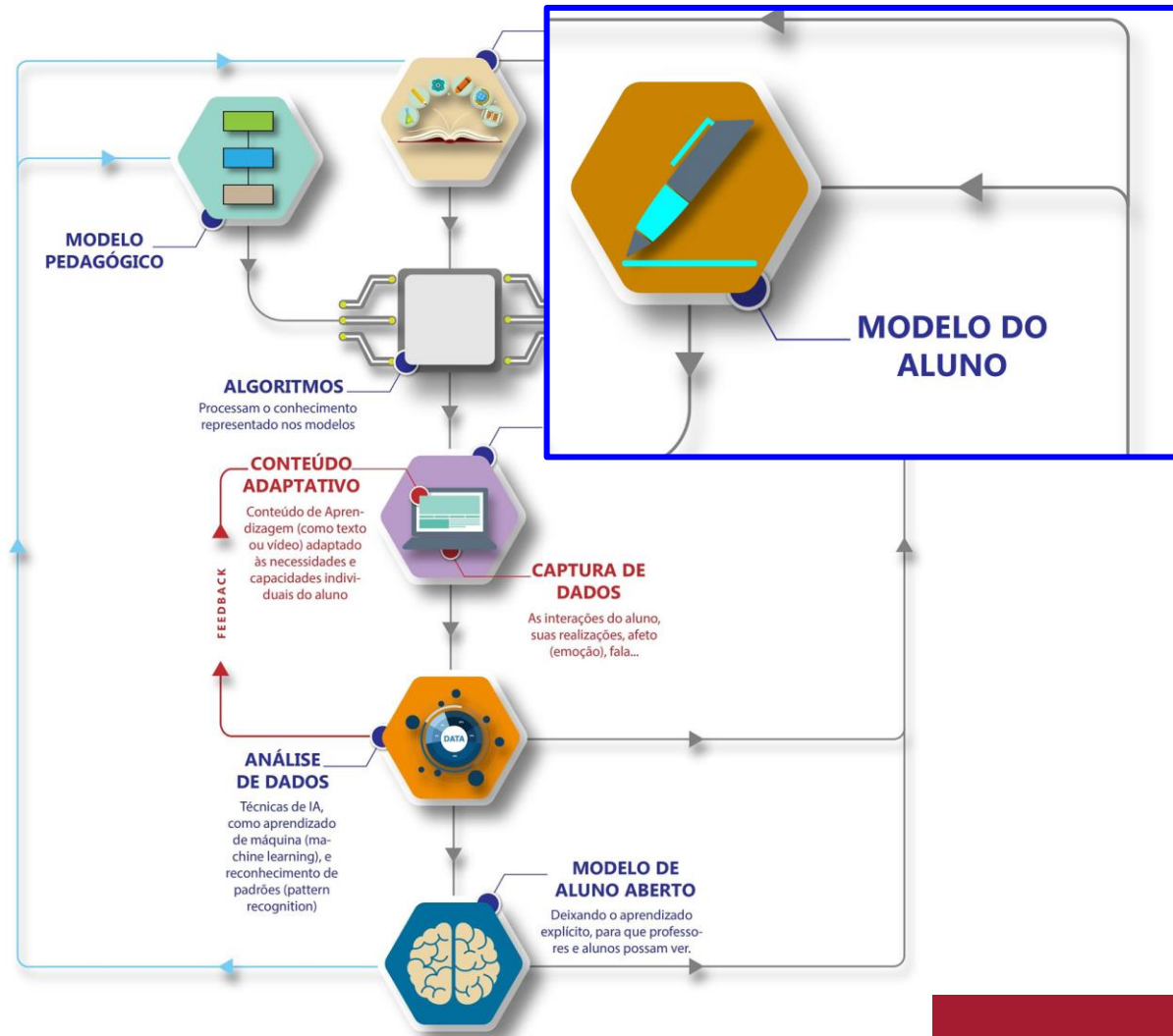
Agentes pedagógicos como apoio à inteligência aumentada



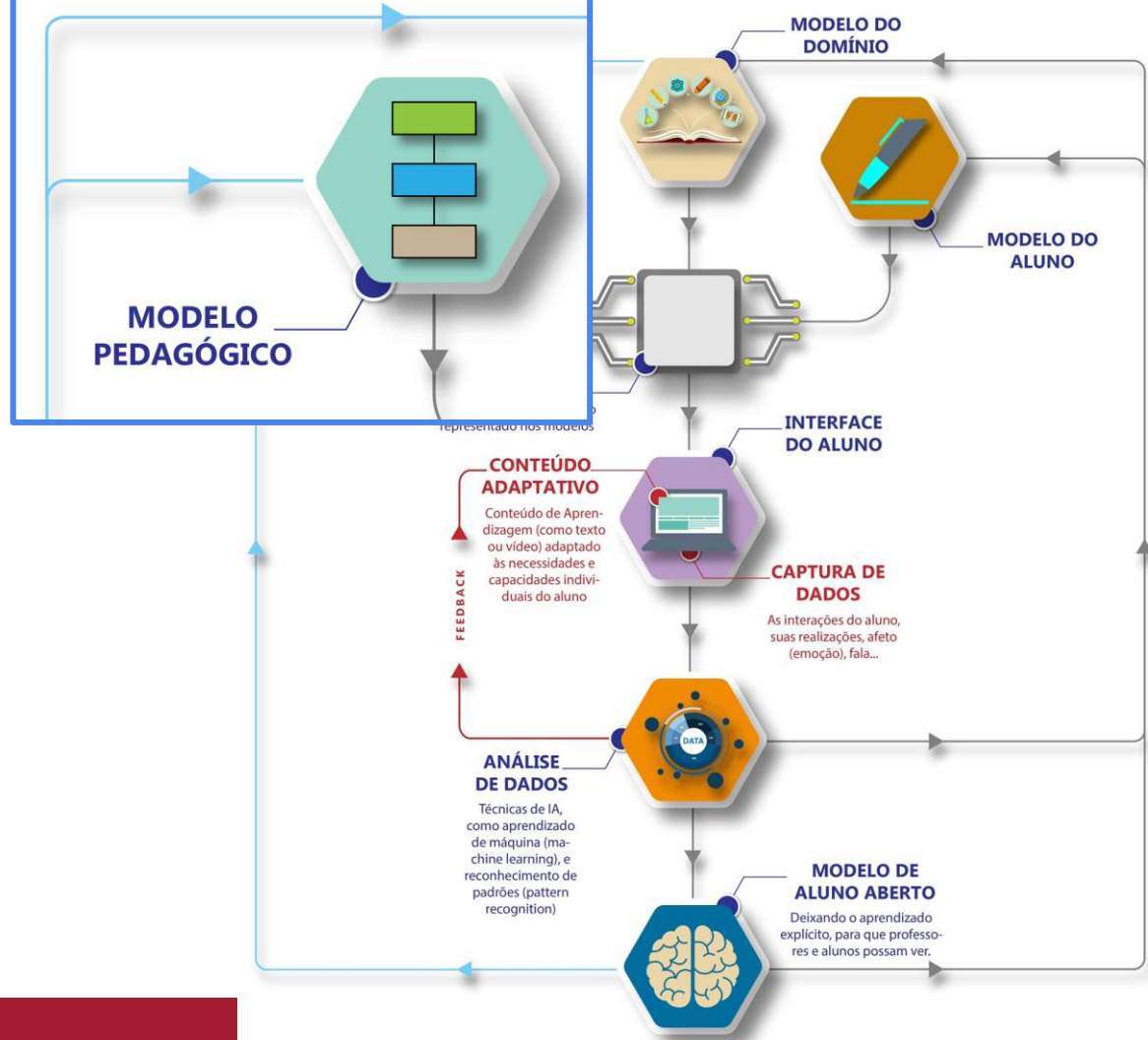
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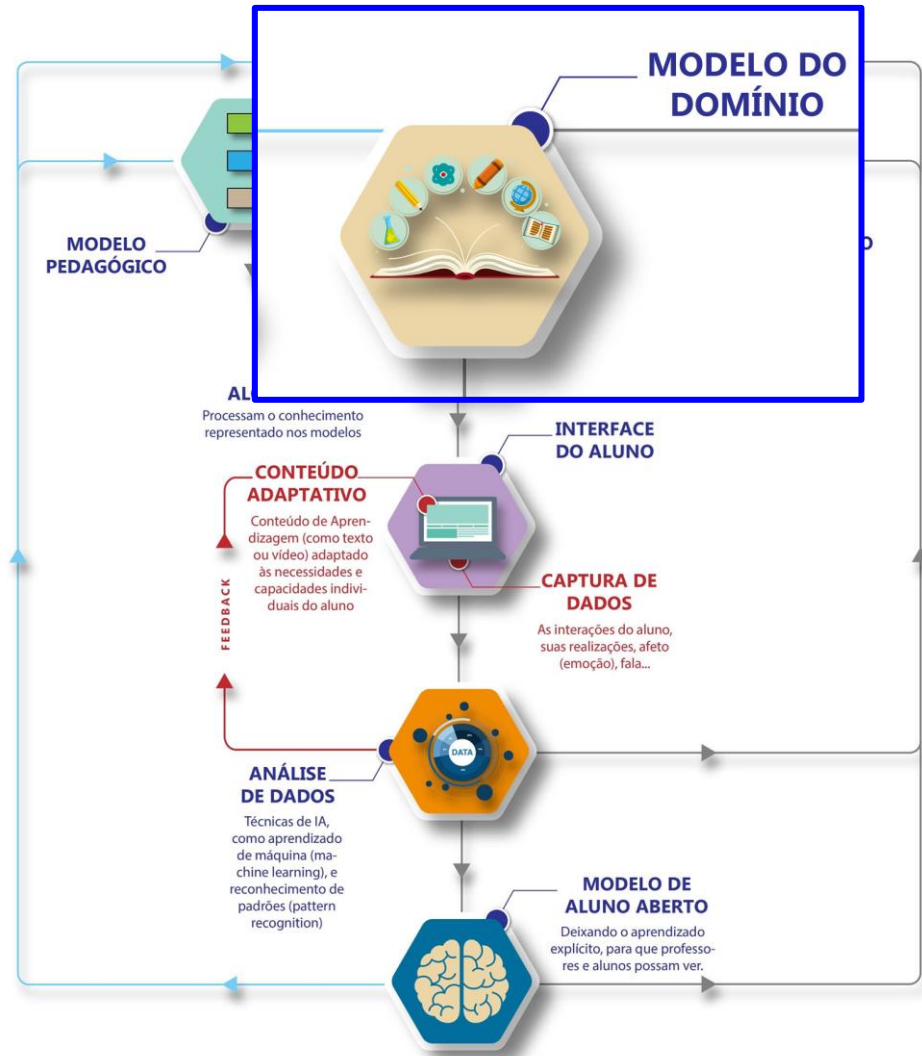
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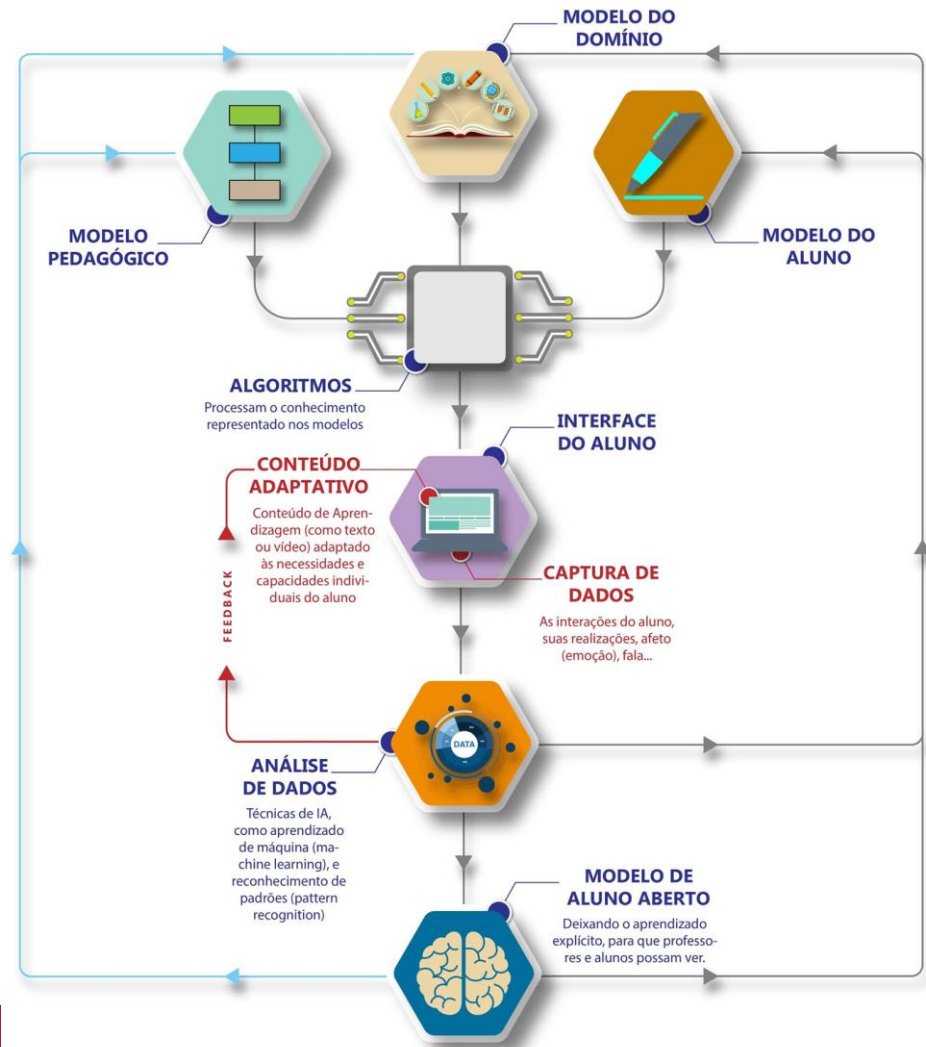
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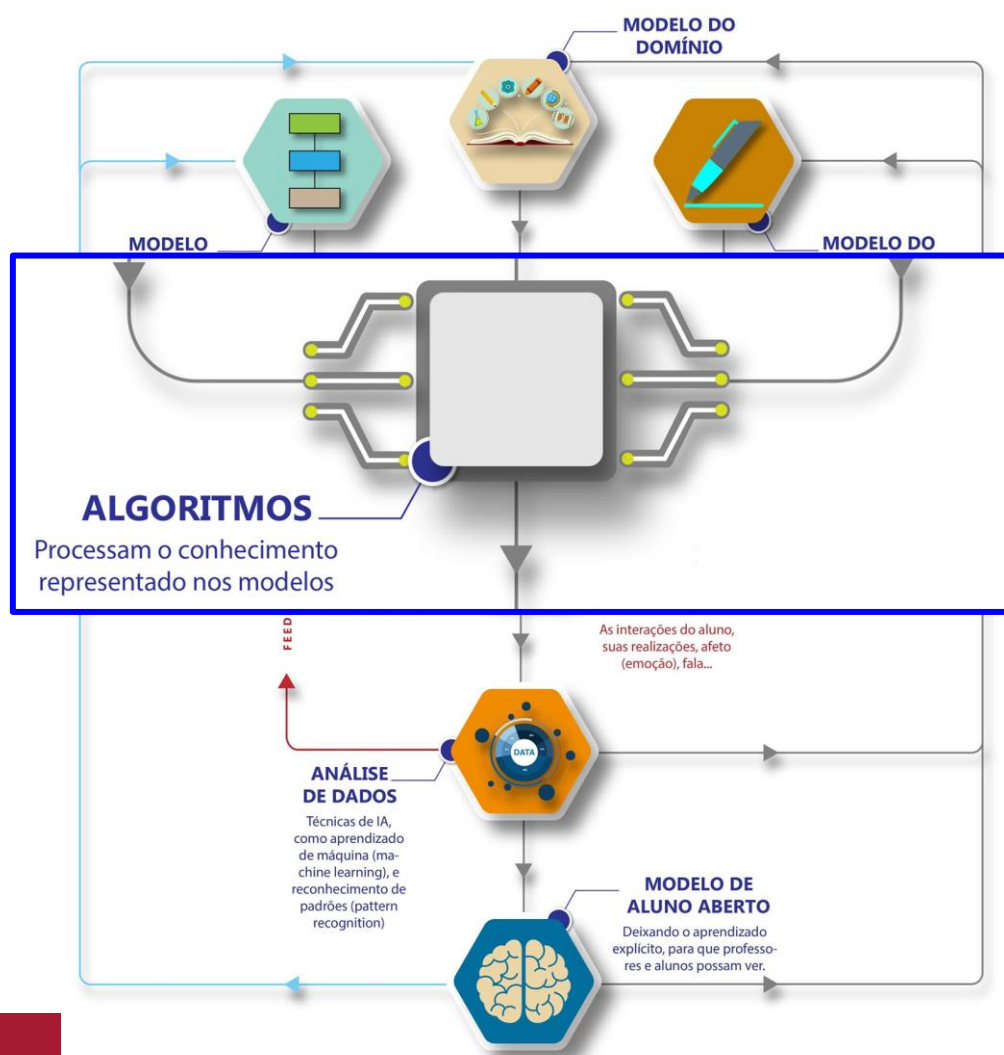
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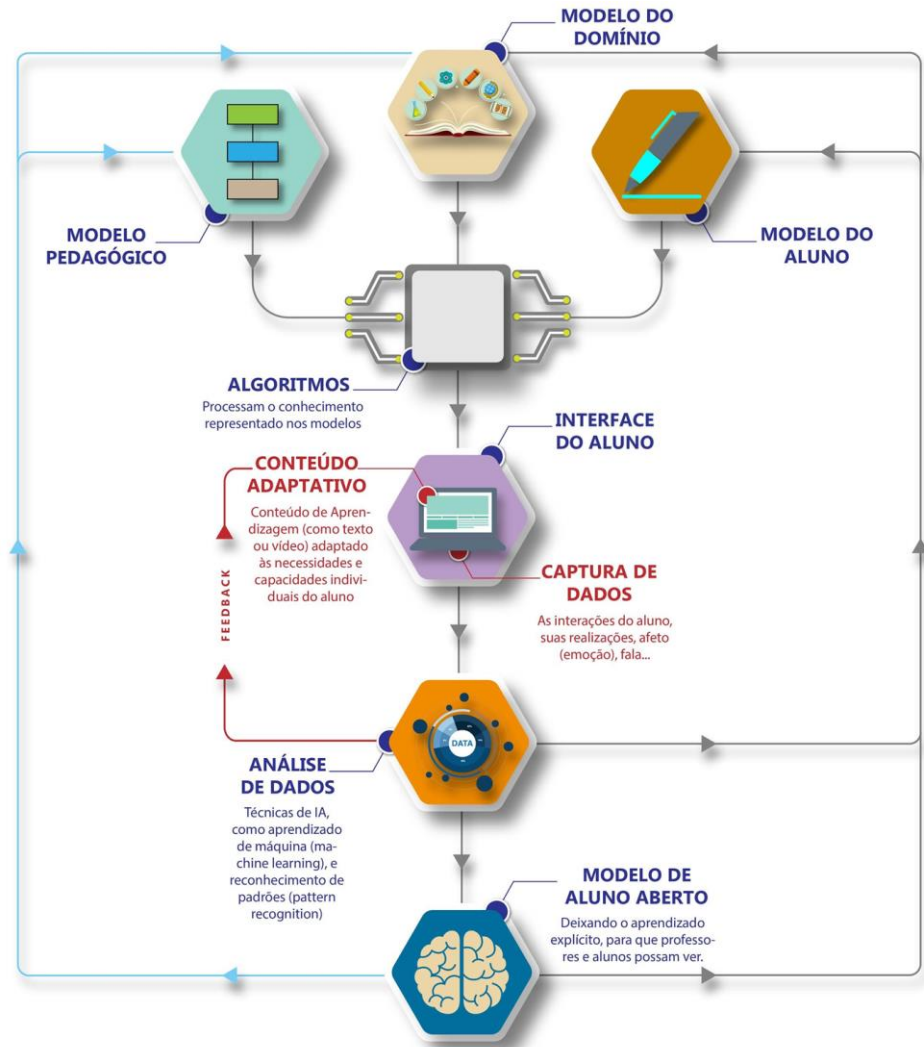
Arquitetura de um STI



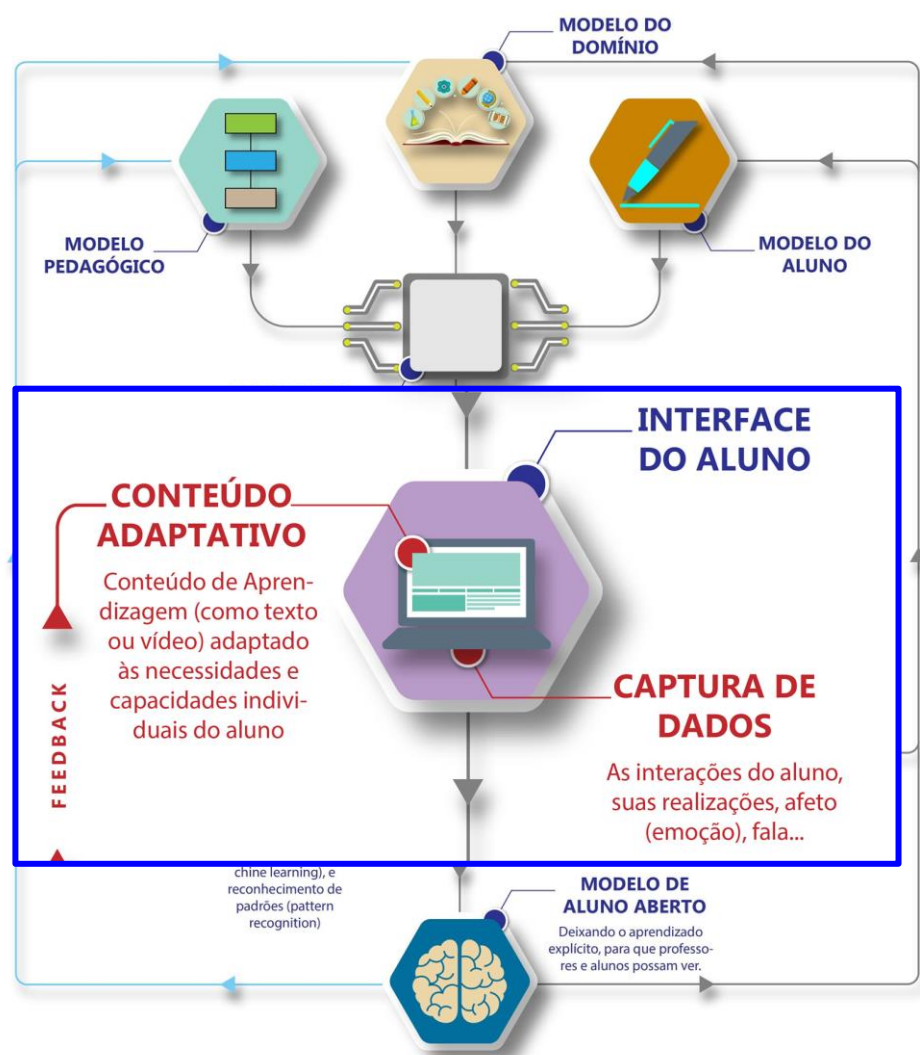
Arquitetura de um STI



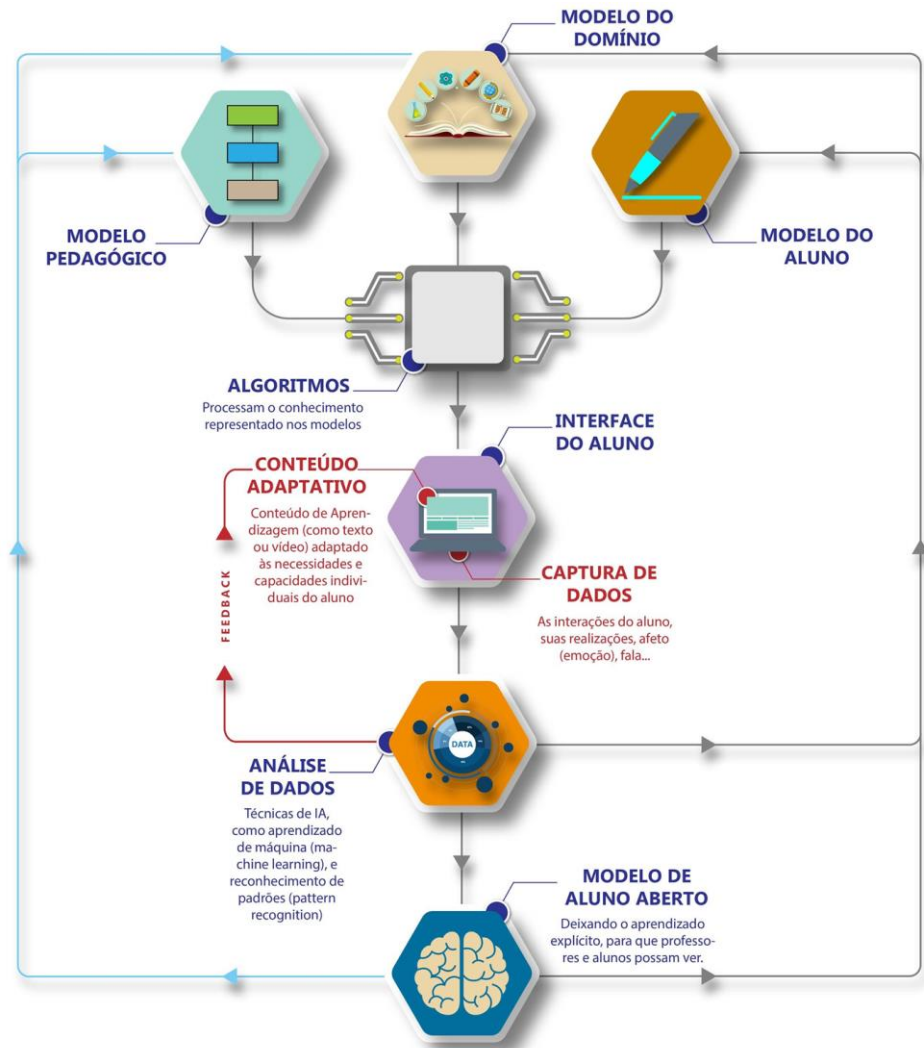
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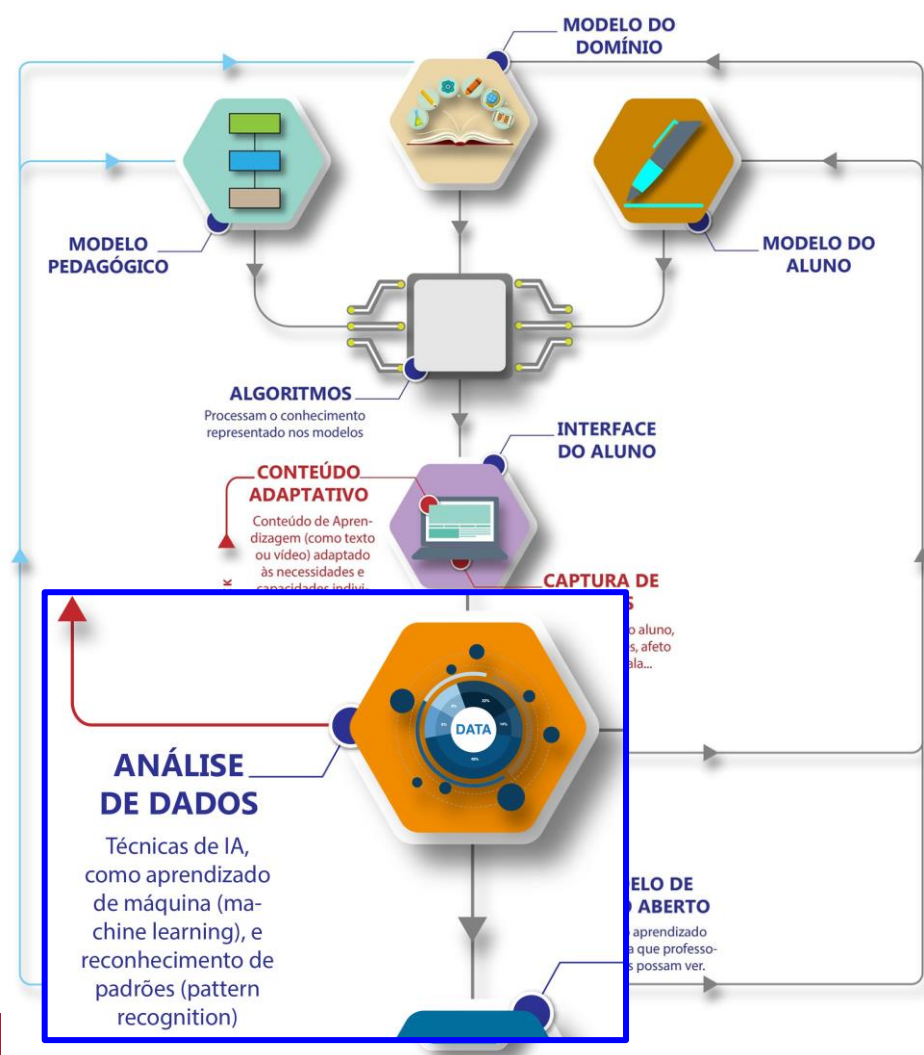
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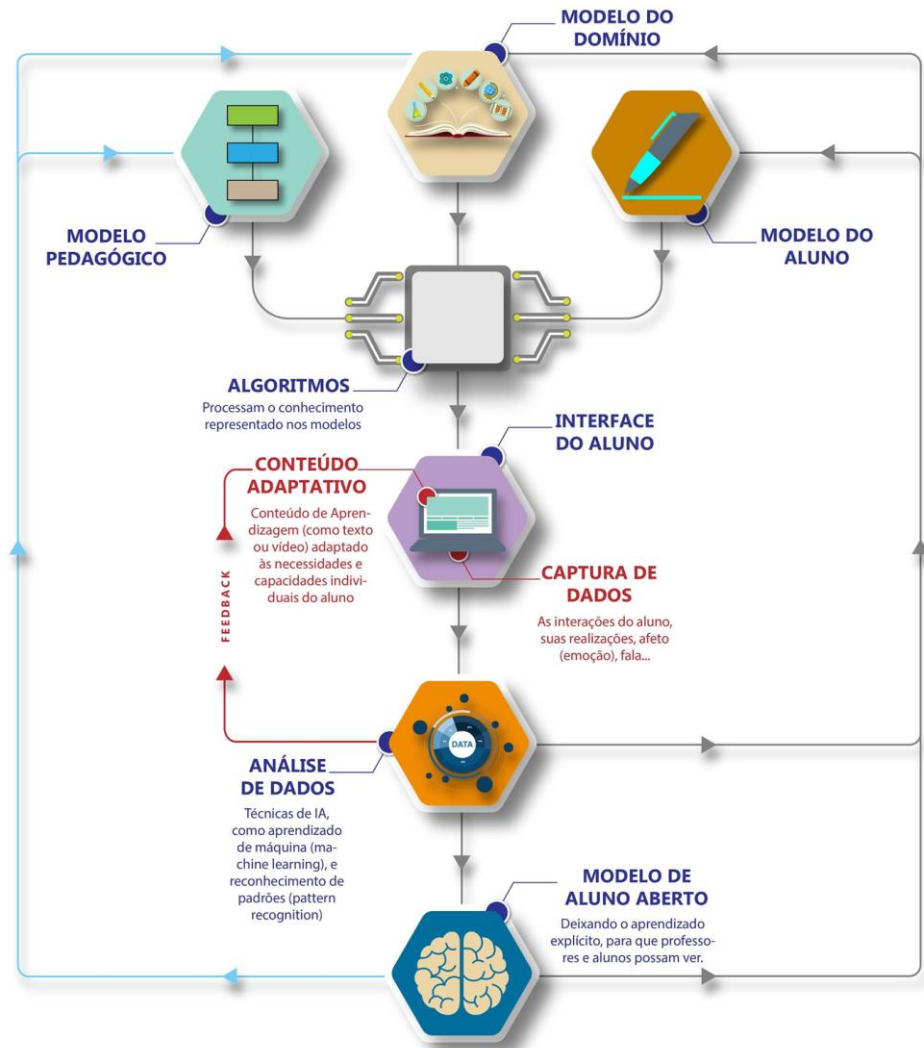
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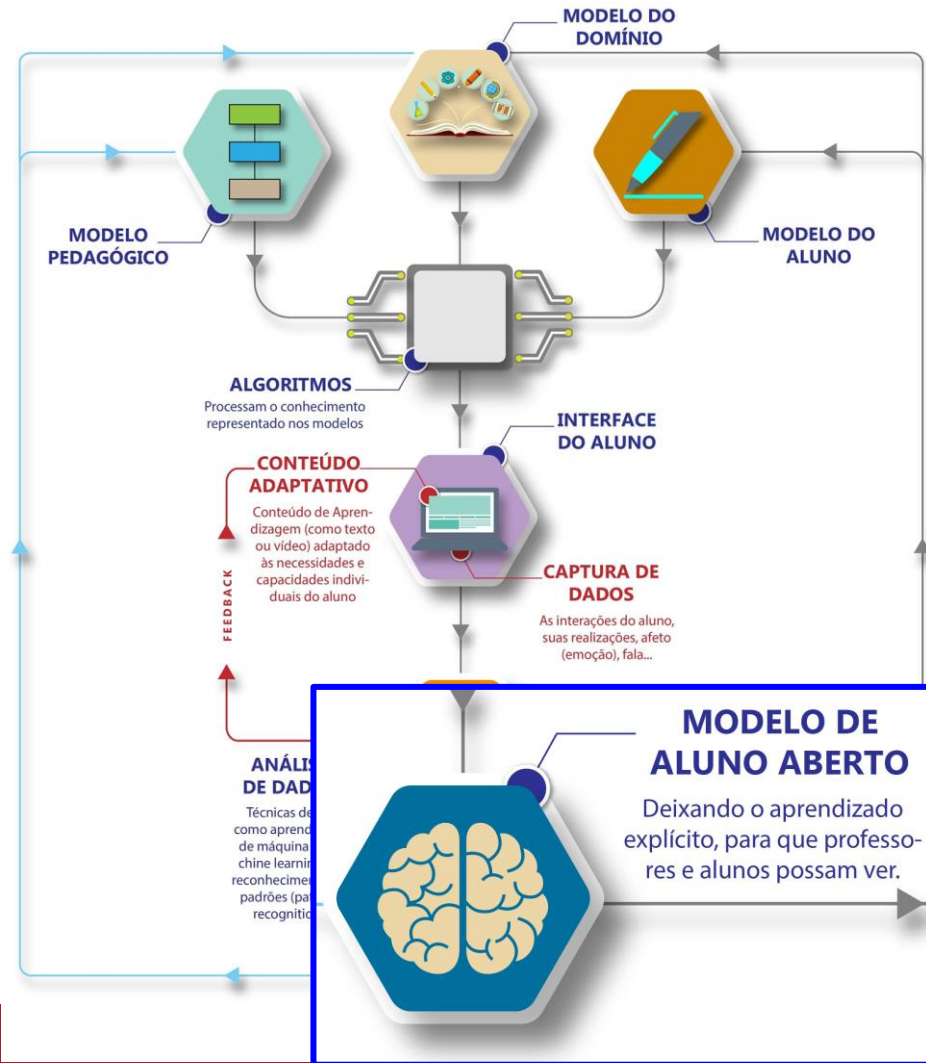
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Arquitetura de um STI



Arquitetura de um STI





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similaridade?**



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Microsoft

**Qual a
diferença?**



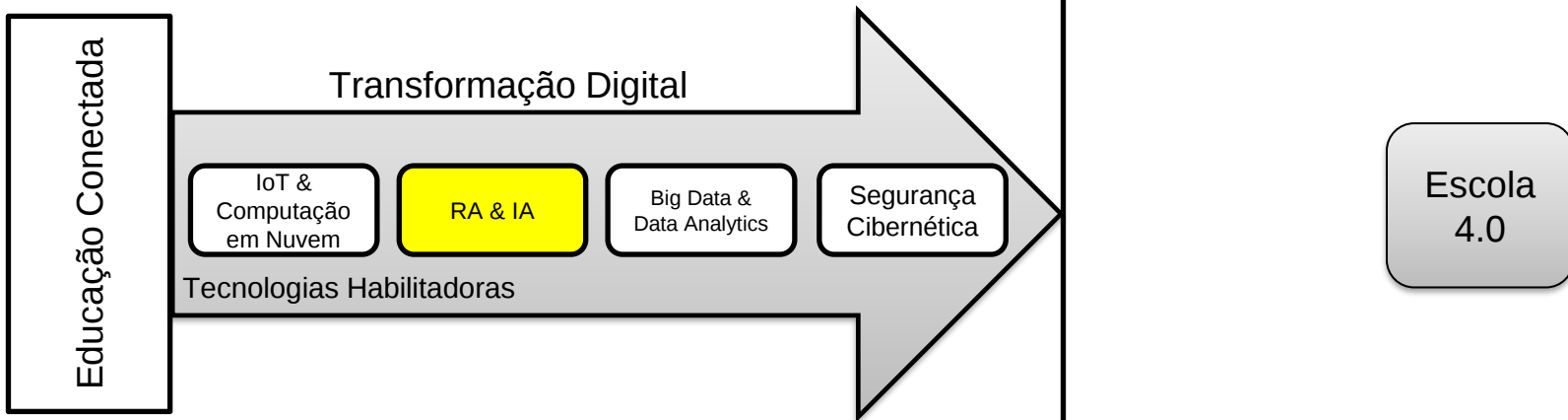
ChatGPT
OpenAI

**Agentes pedagógicos oferecem suporte
cognitivo, criativo, social e emocional
(na direção do bem estar)**

Expectativa



Educação 4.0: Um Arcabouço Conceitual



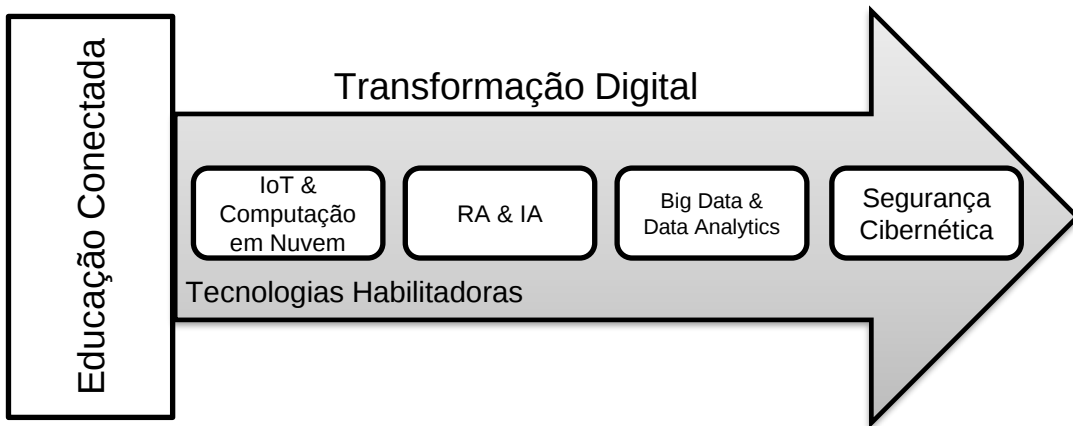
Educação 4.0

Baseada em evidências

Dirigida a Competências



Educação 4.0: Um Arcabouço Conceitual



Educação 4.0

Baseada em evidências
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Dimensão Interna

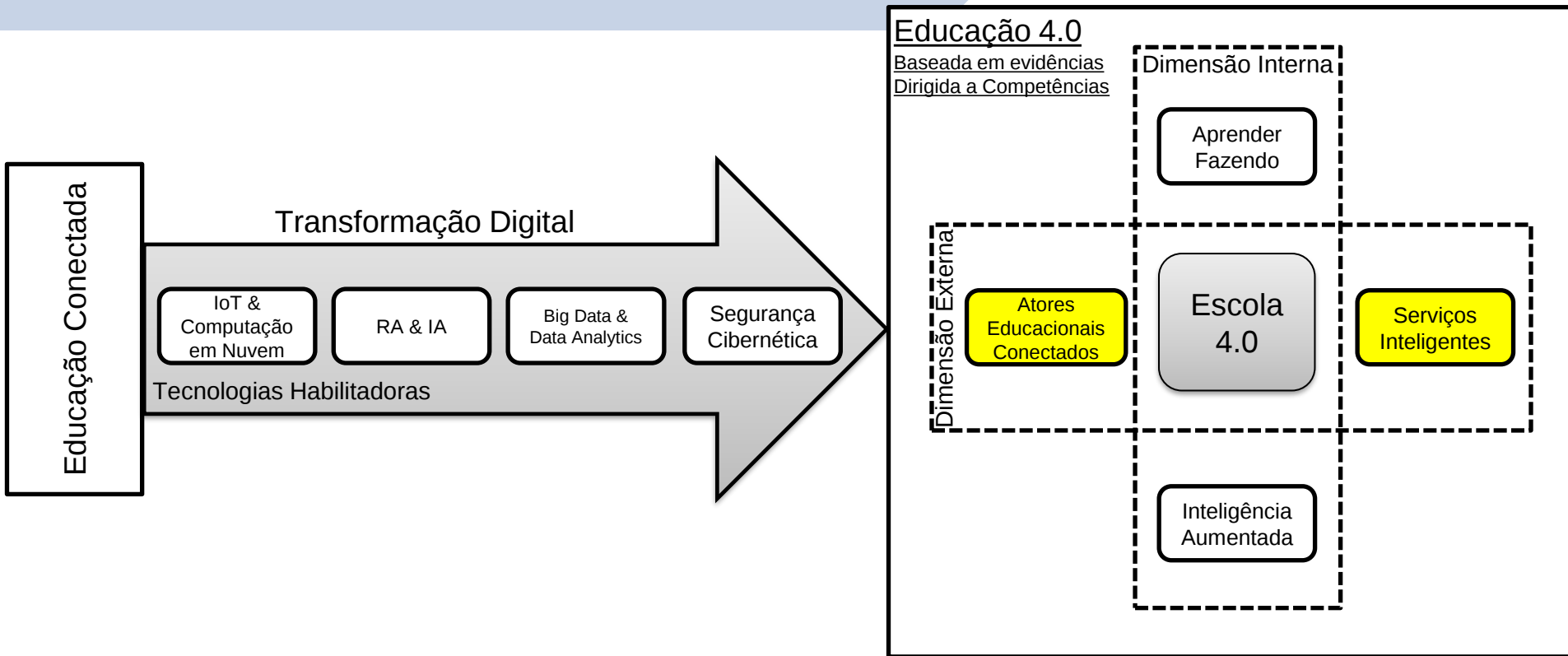
Aprender
Fazendo

Escola
4.0

Inteligência
Aumentada

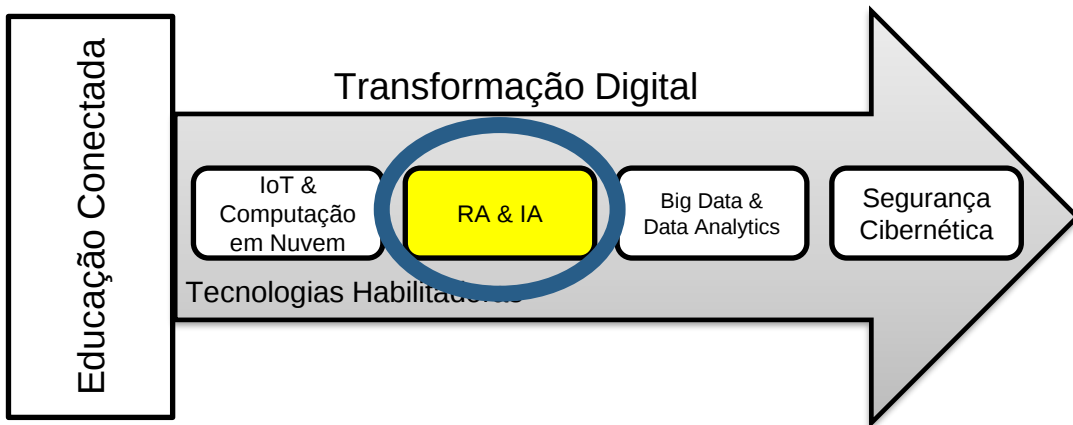


Educação 4.0: Um Arcabouço Conceitual





Educação 4.0: Um Arcabouço Conceitual



Educação 4.0

Baseada em evidências
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