

Collaborative Computational Thinking

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An aerial photograph of a university campus, likely the University of Colorado Boulder, featuring a large green football field with 'COLORADO' written on the end zone, surrounded by brick buildings and a backdrop of rugged mountains under a clear blue sky. The text "programming is hard and boring" is overlaid in a large, bold, orange font across the center of the image.

**“programming is hard
and boring”**



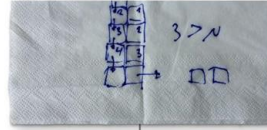
Computational Thinking

Thinking **WITH** the Computer

Computational Thinking

Abstraction

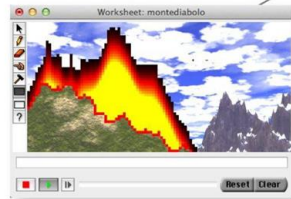
Problem Formulation



"how does a mudslide work?"

Analysis

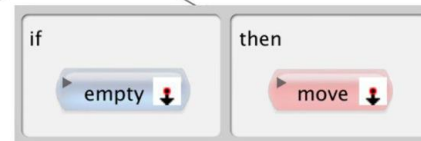
Solution Execution
and Evaluation



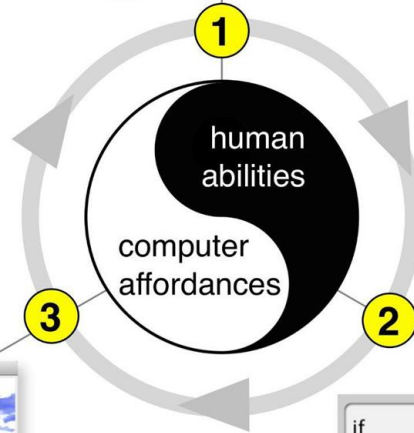
visualize the consequence of thinking

Automation

Solution Expression



build simple model of gravity



Prompting

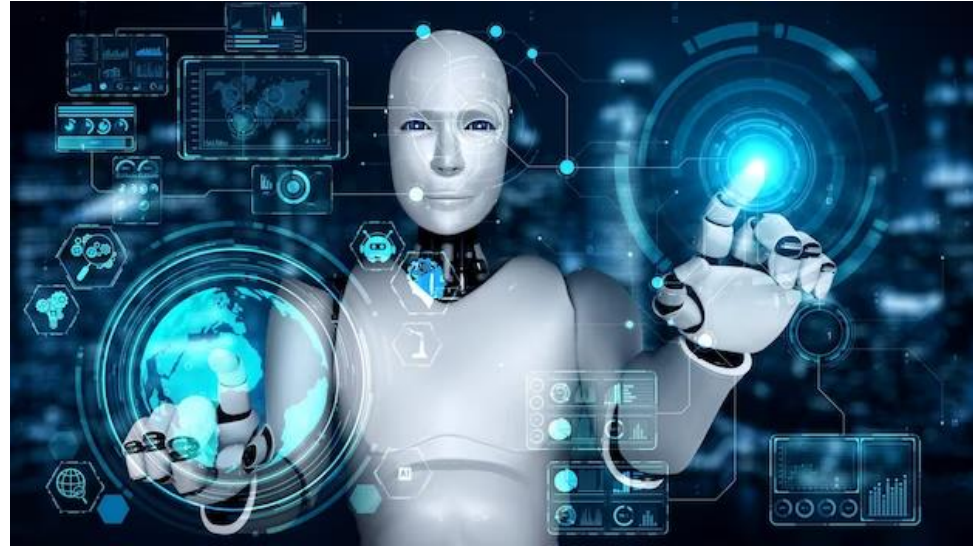
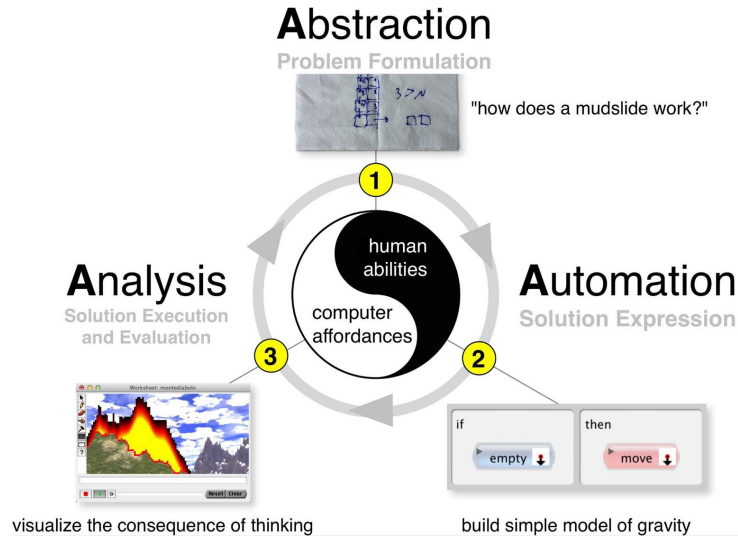


prompt



1. Writing or modifying a [prompt](#) to [chatGPT](#), Midjourney or another AI system, usually to get some desired behavior.

Prompting IS Computational Thinking





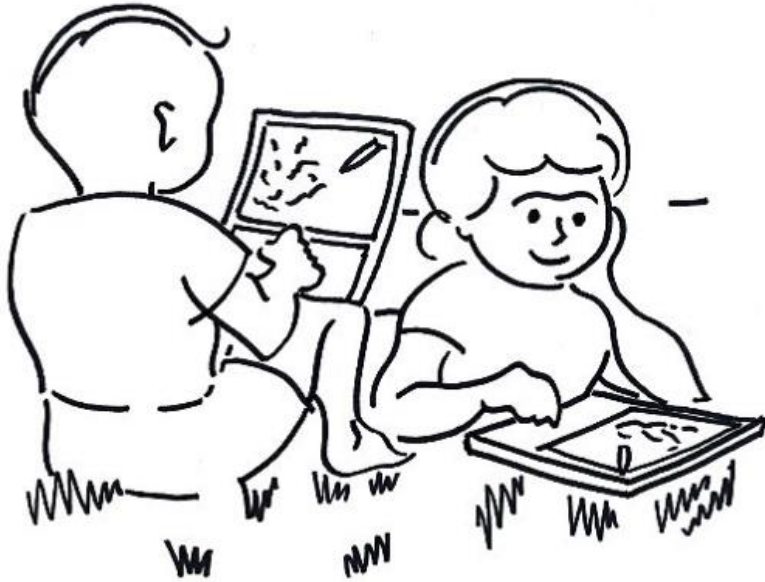
Rodin



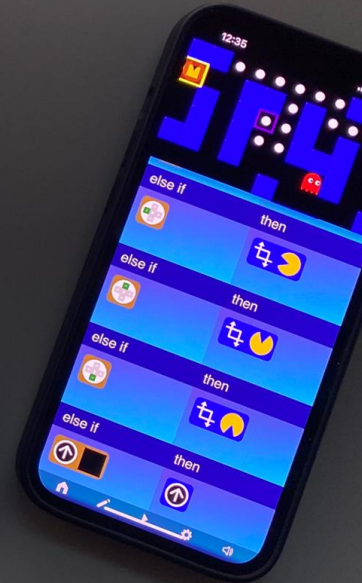
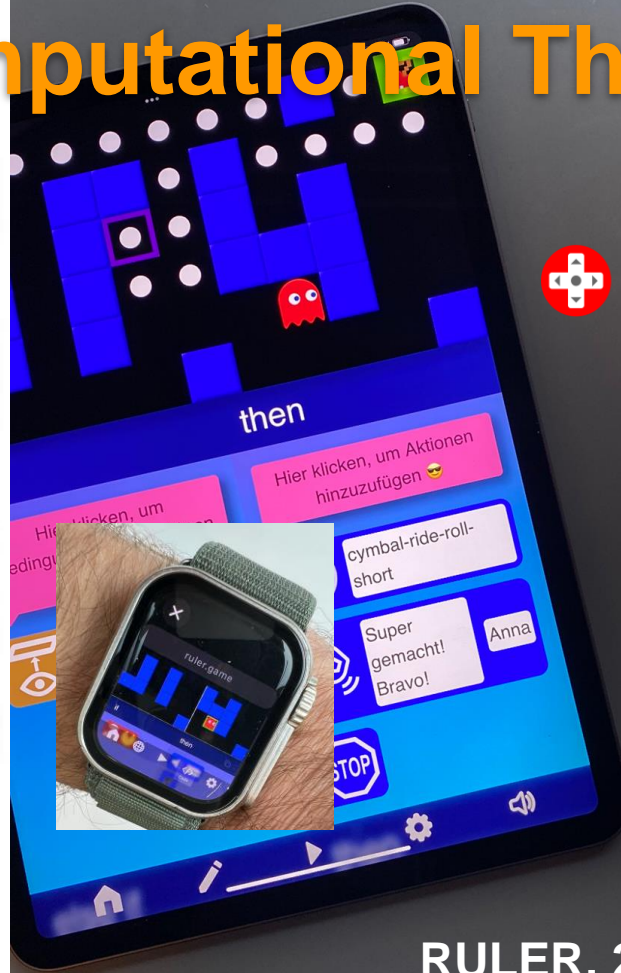
Musk

Collaborative Thinking

Collaborative Computational Thinking

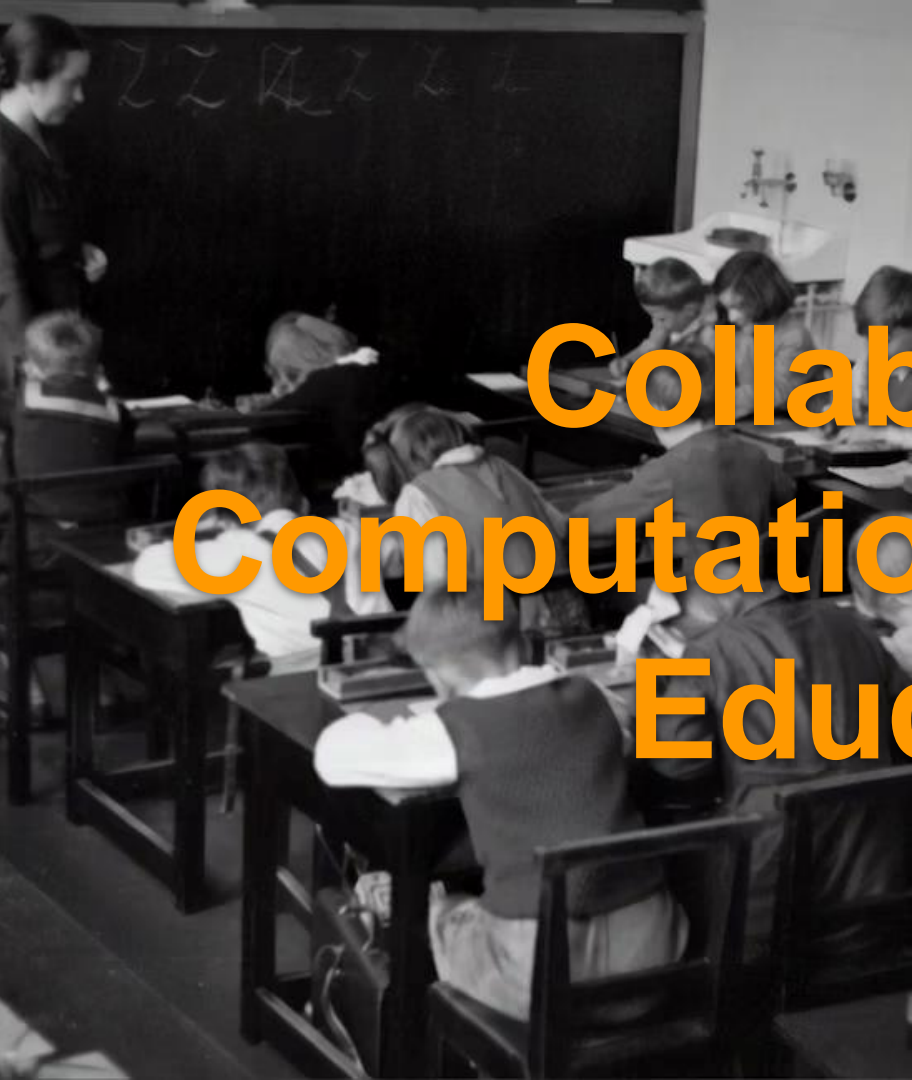


Dynabook, 1972 – Alan Kay



RULER, 2023





Collaborative Computational Thinking Education

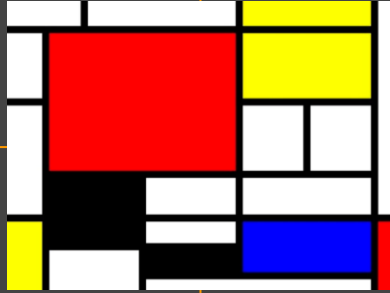
Scaffolding Creativity

different

Process

same

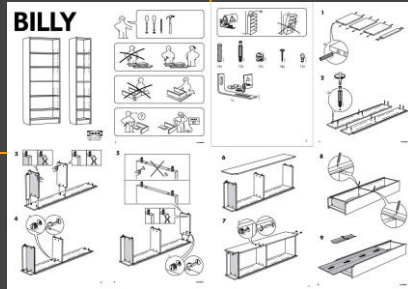
Re-Coding



Architecting



Executing



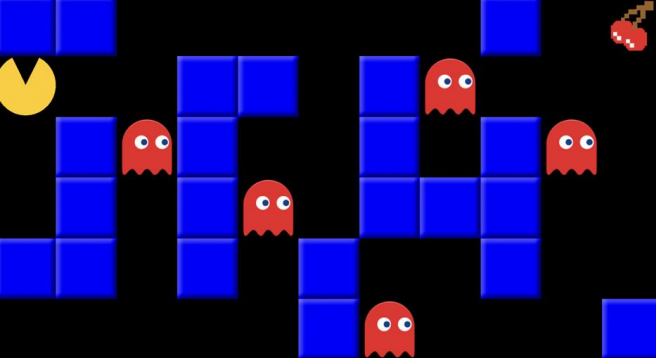
Modding



same

Artifact

different

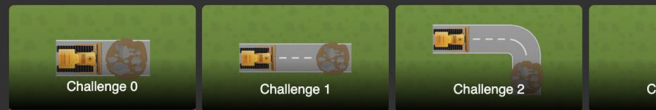


Tippe auf eine beliebige Figur zum
Starten oder öffne ein Spiel

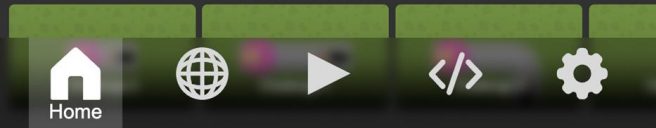
Erste Schritte



Bagger - Kodetu



Prinzessinnen - Kodetu



Thank You!

More info

Paper “Repenning, A., & Grabowski, S. (2023). **Prompting is Computational Thinking**. Paper presented at the 9th International Symposium on End-User Development (IS-EUD 2023), Cagliari, Italy.

Collaborative Computational Thinking Tools
<https://RULER.game>