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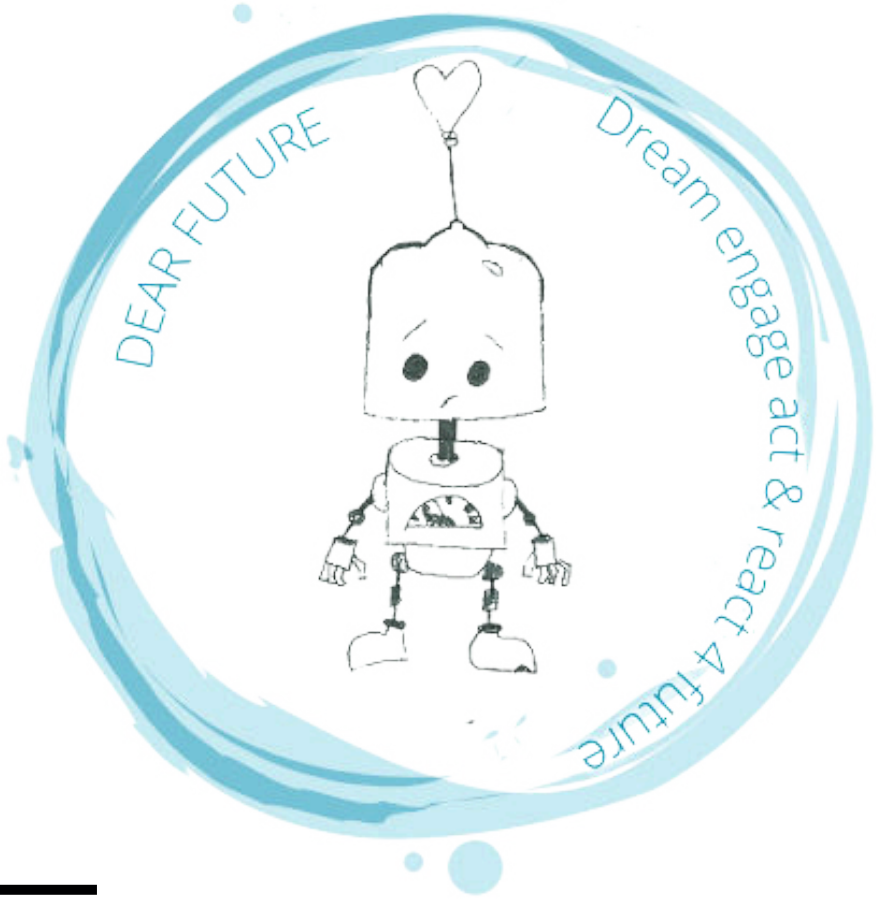

DEAR FUTURE LEARNING & TEACHING MATERIALS

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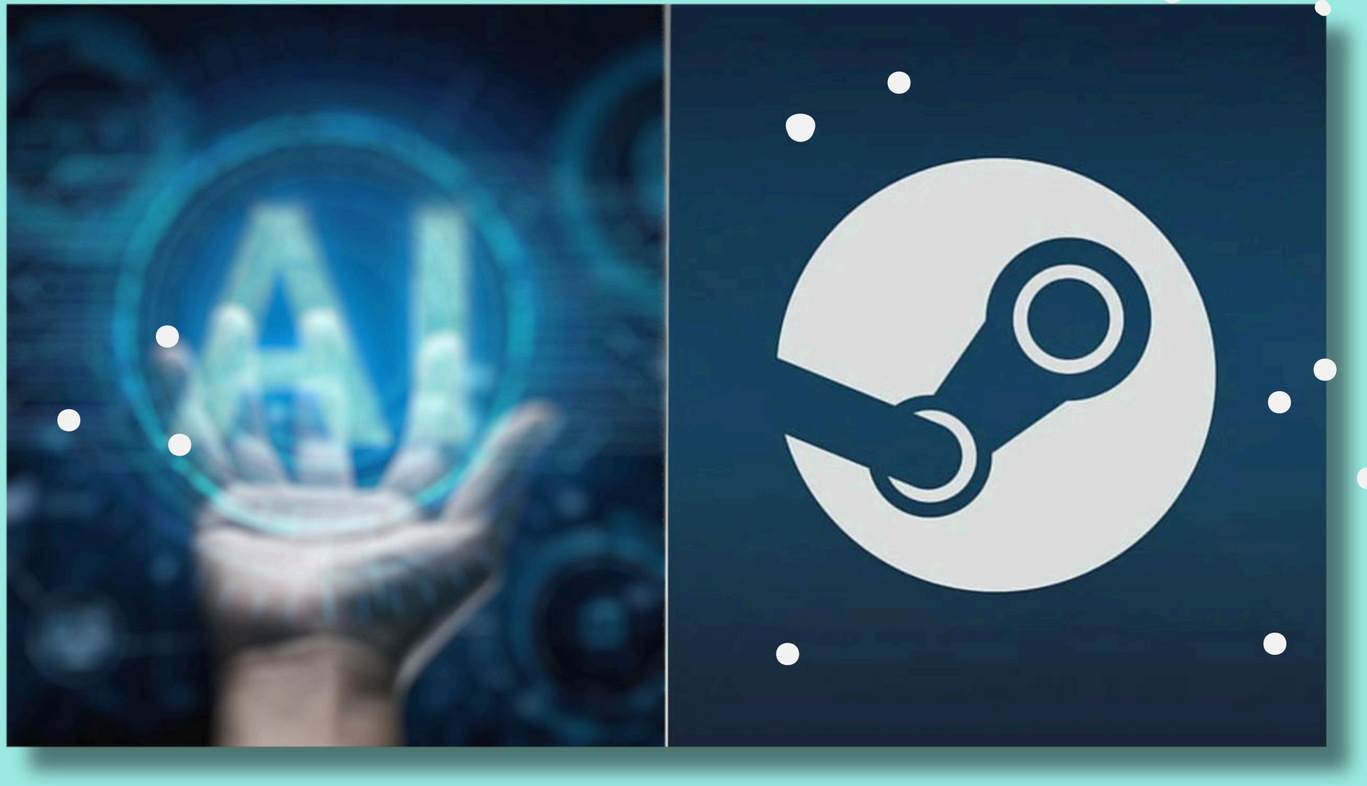
DREAM, ENGAGE, ACT AND RE-ACT 4 THE FUTURE

"DEAR FUTURE"

KA220-SCH-7D1AF292

BY BULGARIA

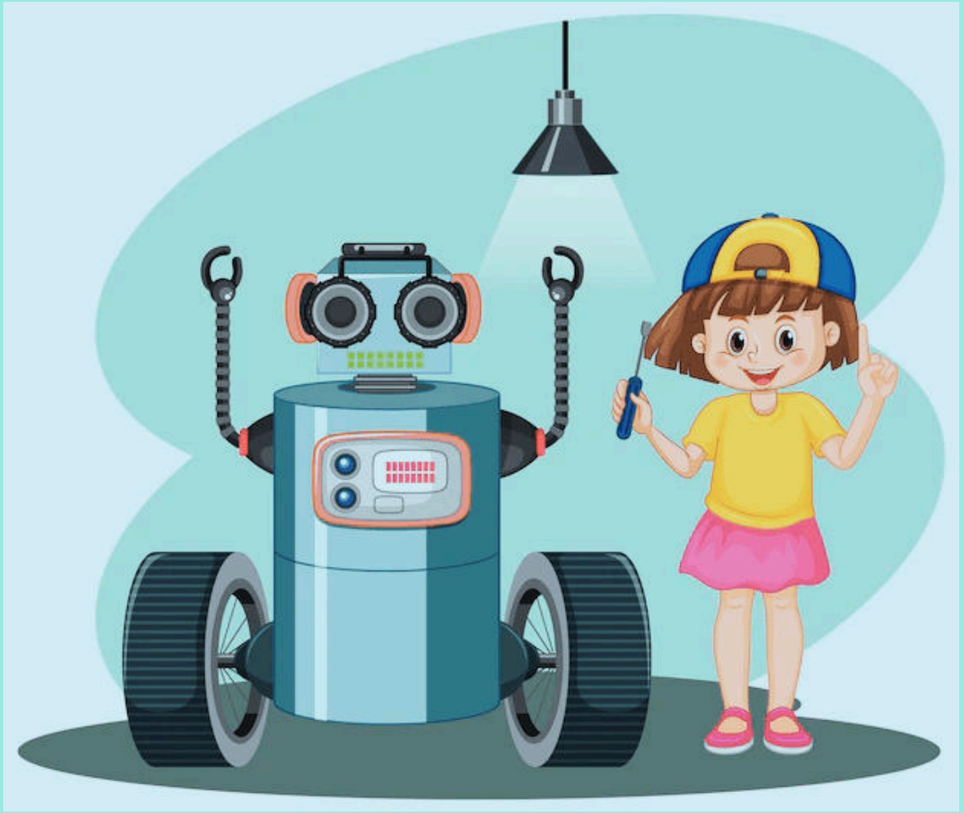
AI IN STEAM EDUCATION



AI IN STEAM EDUCATION

STEAM education is an approach that integrates various disciplines into a comprehensive and interdisciplinary curriculum that prepares students to solve real-world problems and develop critical thinking, creativity, collaboration and communication.

A large part of the schools in Bulgaria are already working in their STEAM centers and are looking for different methods of work, with which they can more easily integrate the educational content, and for other schools this process is yet to come.



AI IN STEAM EDUCATION

However, the development of technology waits for no one. And until the STEM centers are ready, you can spend time learning how to use artificial intelligence in your work.

Artificial intelligence (AI) is a technology that mimics human intelligence and learning ability by using algorithms, data and machine learning. AI can support STEAM education by providing personalized and adaptive learning environments and resources, by analyzing the learning process and outcomes, by supporting teachers and students in their work and interaction.

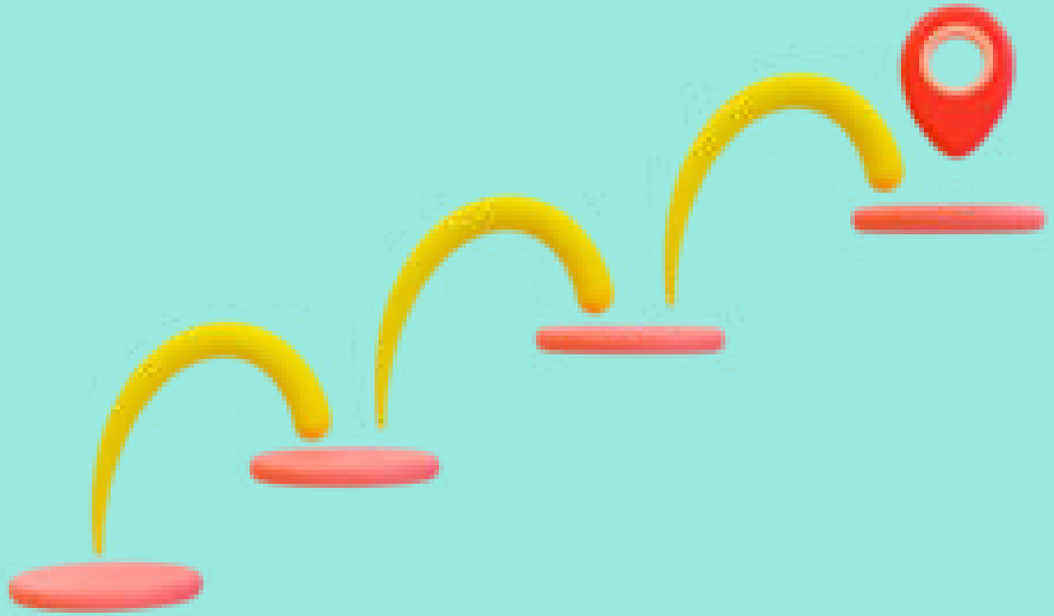
AI IN STEAM EDUCATION

Artificial intelligence can have many positive applications in STEM education, such as:

- Creating personalized and adaptive learning programs that take into account the level and interests of each student.
- Using virtual assistants and speech and facial recognition software to enhance communication and interactivity.
- Assessing students' knowledge and skills using automatic assessment and feedback systems.
- Support teachers in planning and conducting lessons using data analysis and artificially generated materials.
- Stimulating creativity and problem solving through the use of robotics, drones , gaming and other artificial intelligence technologies.

AI IN STEAM EDUCATION

To implement artificial intelligence in STEM education, you can follow some of these STEPS:



AI IN STEAM EDUCATION

STEEPS:

- Learn about the different types of artificial intelligence and how it works. You can use tutorials, videos or articles for this purpose.
- Choose the right AI software or platform according to your goals and needs. You can seek recommendations from other teachers or experts on the subject, as well as a consultant at a company that deals with the development of implementation of artificial intelligence in education.
- Adapt your program or curriculum to use artificial intelligence. You can set specific goals for students, develop projects or tasks with artificial intelligence, or include elements of gamification or collaboration.

AI IN STEAM EDUCATION

STEEPS:

- Educate yourself and your students constantly about the latest developments in artificial intelligence. You can follow current news, studies or blogs on the subject or attend seminars, webinars or conferences.
- Evaluate the effectiveness and outcomes of implementing artificial intelligence in STEAM education. You can collect data on student achievement, motivation and satisfaction and analyze it with the help of artificial intelligence.
- Adhere to ethical and legal principles when using artificial intelligence in education. For this purpose, inform yourself about the EU regulations and standards on this matter or consult with data protection or cyber security specialists.

AI IN STEAM EDUCATION

Artificial intelligence, chatbots and machine learning have transformed many industries – including education. As educators facing the challenges and opportunities presented by these new technologies, we want to understand how it works, what the ethical implications are, and how to help our learners navigate AI safely and effectively.

AI IN STEAM EDUCATION

GETTING CREATIVE WITH AI

The best way to learn science is to do science.
As we explore, we'll learn how popular technologies like chatbots work and discover how AI can be used in games.
These activities will encourage and enable us to be creative, think critically and solve problems.

AI IN STEAM EDUCATION

HANDS-ON STEAM EXERCISES INTEGRATED WITH AI

Now let's move on to some practical examples.

Let's roll up our sleeves and dive into the world of STEAM armed with our trusty AI tools.

AI IN STEAM EDUCATION

THE WEATHER FORECASTER WITH ARTIFICIAL INTELLIGENCE

Required products: Computer with internet access, notebook and pen.

Steps:

1. Go to an easy-to-use AI weather forecasting platform, such as IBM's Watson.

2. Enter the required parameters (such as your location).

3. Let AI predict the next week's weather. Record these predictions in your notebook.

4. Daily compare the AI forecast with the actual weather, noting the accuracy.

5. At the end of the week, discuss with your child the accuracy of the AI predictions and what factors may affect them.

AI IN STEAM EDUCATION

AI ART PROJECT

Required Products: Computer with internet access and DeepArt or similar AI art tool.

Steps:

1. Select a photo or artwork you want to recreate.

2. Upload the selected image to the AI tool.

3. Choose a style you want the AI to imitate.

4. Let the AI tool transform your image.

5. After the transformation is complete, discuss the results. How does the new image compare to the original? How well did the AI capture the chosen style?

AI IN STEAM EDUCATION

AI POWERED LANGUAGE TRANSLATOR

Necessary products:

1. Computer or smartphone with internet access
2. AI language translation platform (such as Google Translate or Microsoft Translator)
3. Text in a foreign language

Steps:

1. Start by choosing a foreign language text that you want to understand. This could be a children's story or even a web page. Make sure the text is appropriate for your child's age and interests.
2. Use the AI-powered language translation tool to translate the text into your native language.
3. Read the translated text and try to understand the content. Note any peculiarities or errors in the translation.
4. Discuss the limitations and strengths of artificial intelligence in language translation. Explore how cultural nuances, idioms and context can affect translation.

AI IN STEAM EDUCATION

CREATING MUSIC WITH ARTIFICIAL INTELLIGENCE

Necessary products:

1. Computer or smartphone with internet access
2. AI music creation tool (like AIVA or OpenAI's MuseNet)

Steps:

1. Start by introducing your child to the concept of creating music with artificial intelligence. Explain how an AI can learn from a database of music to compose its own unique tracks.
2. Go to the AI music maker. Many of these tools offer various customization options, such as genre, mood, or even basing the composition on a specific artist's style.
3. Select the parameters you want the AI to take into account when creating the music.
4. Let AI compose the music.
5. After the composition is ready, listen to the music. Discuss how well the AI was able to stick to the chosen parameters.
6. Immerse yourself in a discussion about the role of AI in creative fields. Discuss the differences between human-composed and AI-composed music and the potential implications for the future of music.

AI IN STEAM EDUCATION

These exercises combine the power of AI with the creativity of STEAM, creating engaging, hands-on learning experiences. Like putting on a pair of high-tech goggles, they allow us to look at education through a different lens, opening our eyes to the endless possibilities that lie at the intersection of AI and STEAM.

AI IN STEAM EDUCATION

IN CONCLUSION

On the one hand, we have the dynamic, ever-evolving stream of AI, on the other, the vibrant, multifaceted stream of STEAM. Together, they come together to create a powerful educational current that is set to revolutionize learning as we know it.

The role of AI in STEAM is no longer a matter of "if" but "when" and "how." As we sail forward on this wave of educational transformation, we are on an exciting journey, shaping a future where learning is personalized, engaging and limitlessly creative.

The possibilities are as vast as the open sea and as diverse as the creatures beneath its surface. All we need is the courage to dive in, explore and adapt to this brave new world of AI-integrated STEAM education.

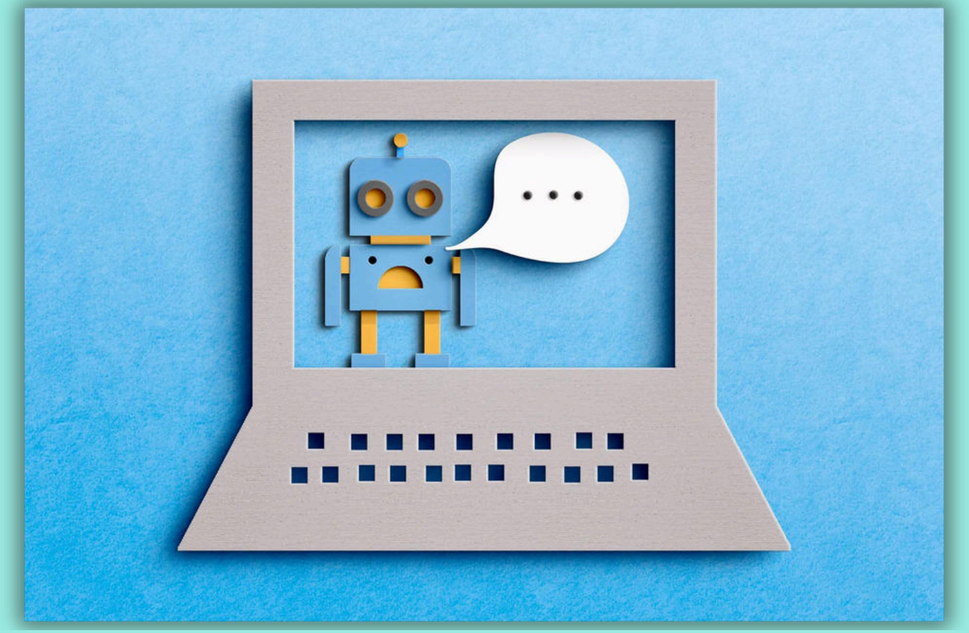
AI IN STEAM EDUCATION

RESOURCES:

https://www.futureschoolai.com/blog/the-intersection-of-ai-and-steam-education

https://www.sciencefriday.com/articles/ai-for-stem-education/

https://cpocreativity.com/



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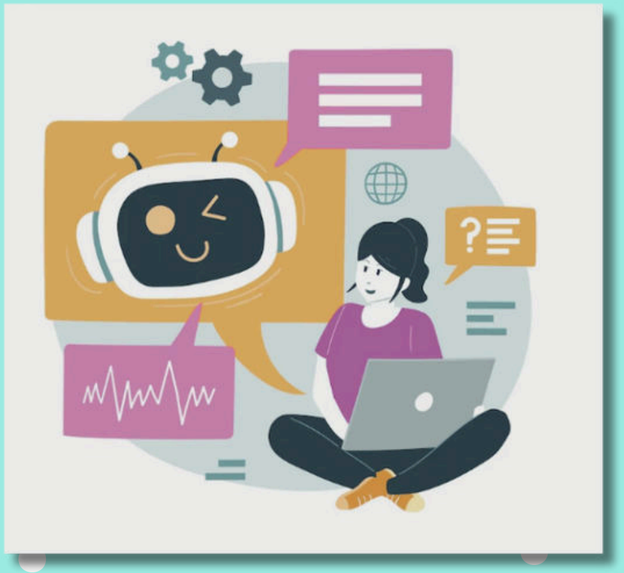
DREAM, ENGAGE, ACT AND RE-ACT 4 THE FUTURE

"DEAR FUTURE"

KA220-SCH-7D1AF292

BY BULGARIA

AI CURRICULUM & LESSONS



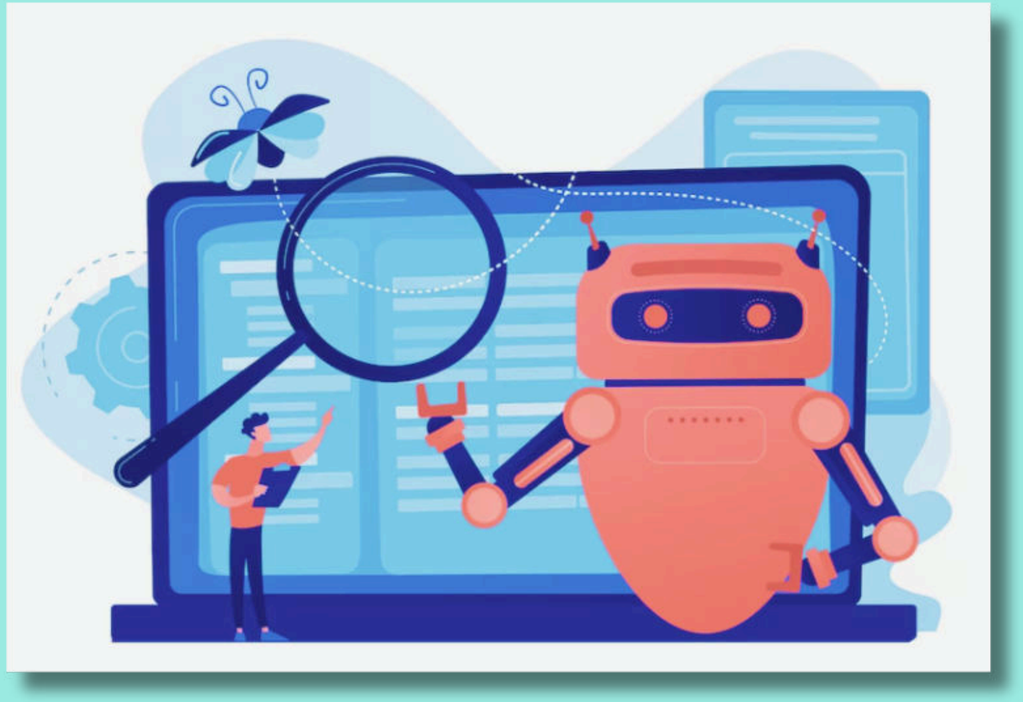
AI CURRICULUM & LESSONS

Developing lesson designs is a labor-intensive task that takes hours of preparation time.

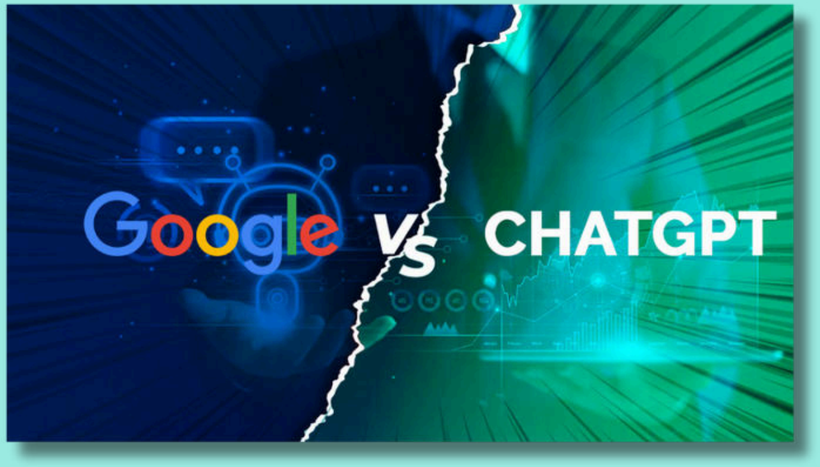
Fortunately, developments in artificial intelligence (AI) are now allowing teachers to leverage the capabilities of AI through innovative applications to streamline instructional design preparation.

AI CURRICULUM & LESSONS

AI technology has become faster and can be used as a highly intelligent personal assistant and time-retrieval genie.
In addition to teaching it and taking advantage of Google using predictive analytics to improve our research, AI can improve our collaborative lesson planning.
Here are two time-efficient ways you can use ChatGPT to support your planning for learning in your classroom.



AI CURRICULUM & LESSONS

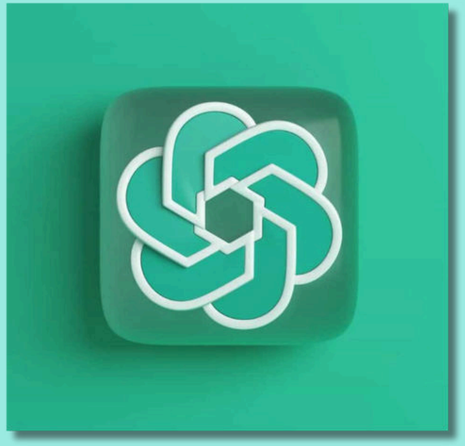


USE CHATGPT FOR GOOGLE

ChatGPT is a conversational AI model (or chatbot) that responds like a human to the questions we type.
Here's how: Google pulls information from all over the Internet, but users can set ChatGPT to pull data it's trained on, and it gets smarter over time. This means we can train the AI model to highly personalize our search queries.

For teachers looking to increase their lesson planning productivity, there is no single way to map and align curriculum and instruction. They should continue to use their methods and templates and adjust the questions to better suit their own lesson ideas.

AI CURRICULUM & LESSONS

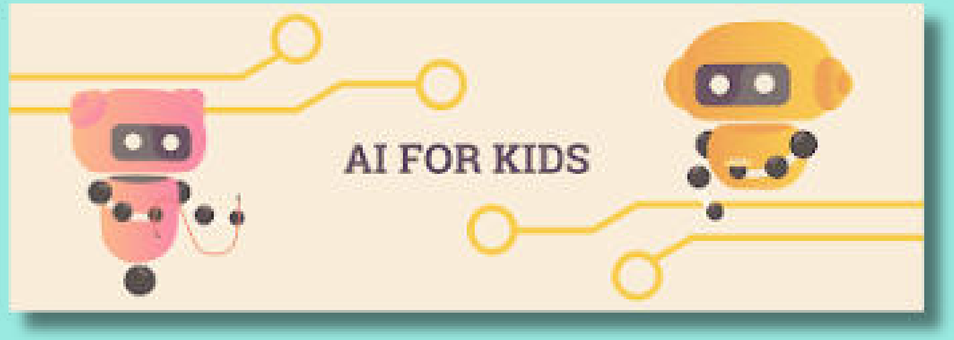


USE CHATGPT TO PLAN ACTIVITIES

Many teachers are always looking to increase engagement and real-world application by making learning more project-based and passion-driven, allowing children to participate in activities that are usually done outside of school by adults at work. ChatGPT can quickly assist in providing critical steps, required resources, budget recommendations and timelines.

AI CURRICULUM & LESSONS

ARTIFICIAL INTELLIGENCE FOR KIDS: CURRICULUM LESSON PLAN



Lesson 1: Introduction to Artificial Intelligence

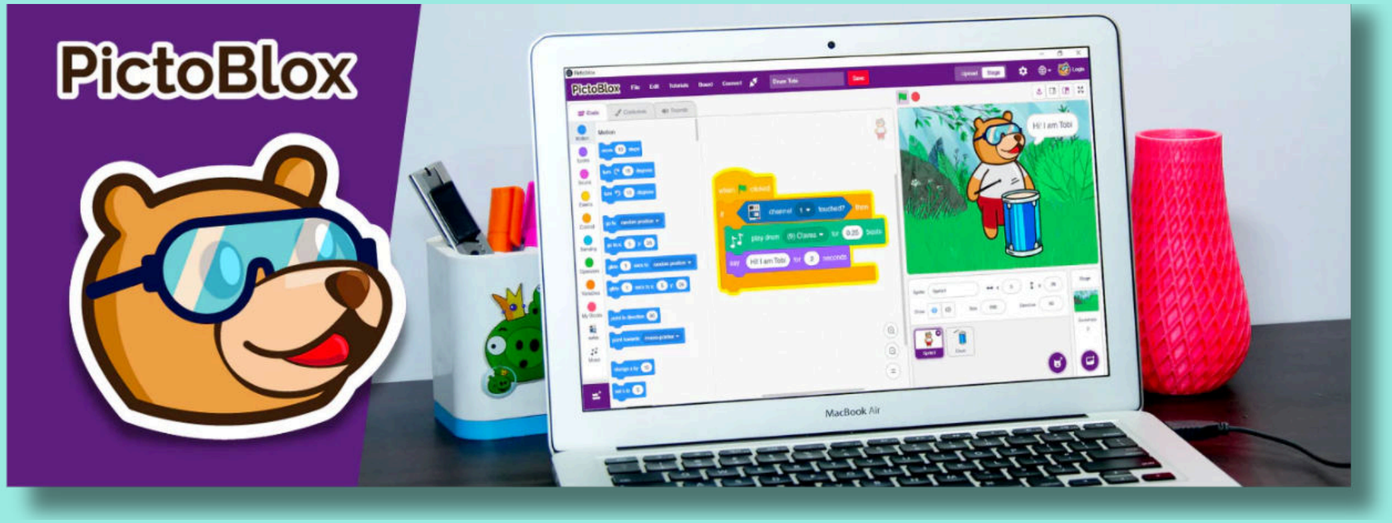
- **Objective:** Human intelligence vs. artificial intelligence? Advantages and applications of artificial intelligence. Usage of AI to tackle climate change & global challenges.
- **Learning Outcome:** Understand what is the difference between human intelligence and artificial intelligence. Appreciate the advantages of using AI. Correlate with the real-world applications of AI to generate an AI mindset.
- **Mode:** Theoretical Understanding

AI CURRICULUM & LESSONS

ARTIFICIAL INTELLIGENCE FOR KIDS: CURRICULUM LESSON PLAN

Lesson 2: Introduction to PictoBlox

Objective: In this lesson, you will learn how to make projects in PictoBlox.
Activity 1: Making an Animation
Learning Outcome: Work in PictoBlox efficiently | Make projects in PictoBlox.
Mode: Practical (Coding Basics)

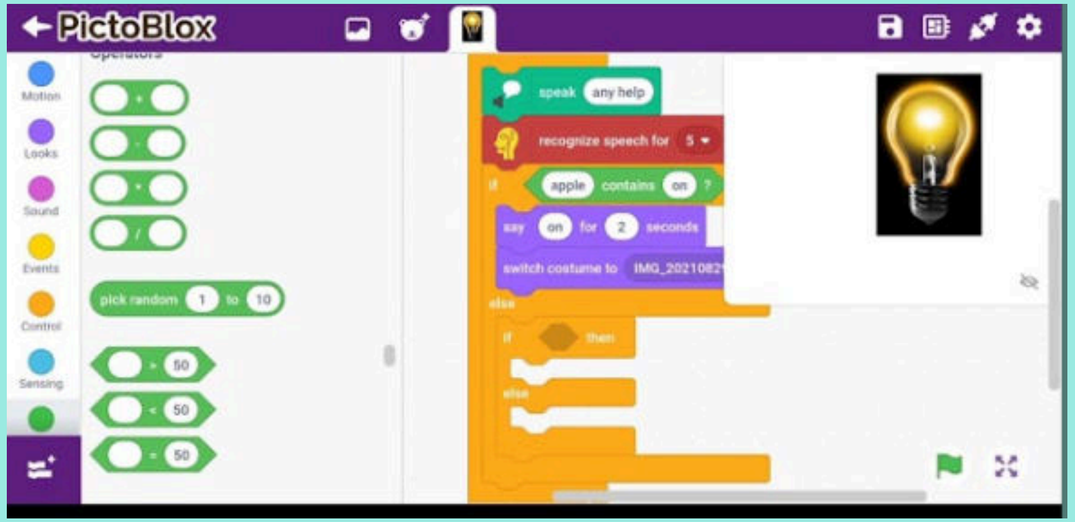


AI CURRICULUM & LESSONS

ARTIFICIAL INTELLIGENCE FOR KIDS: CURRICULUM LESSON PLAN

Lesson 3: Speech Recognition

Objective: Understand how speech recognition works. Use AI blocks in PictoBlox to convert speech into text and use in projects.
Activity 1: Make your own virtual assistant in PictoBlox which recognizes your that can recognize your command play the requested song.
Learning Outcome: Understand how AI delivery bots work. Appreciate the advantages of AI delivery bots.
Mode: Practical (Artificial Intelligence)



AI CURRICULUM & LESSONS

IN CONCLUSION

Finally, as you work with AI models, you may need to rephrase questions to teach them to deliver better results. Undoubtedly, more AI models are headed our way. But no matter how advanced AI models become, they will never replace the human touch. So it is always better to embrace technology along with our human ingenuity.

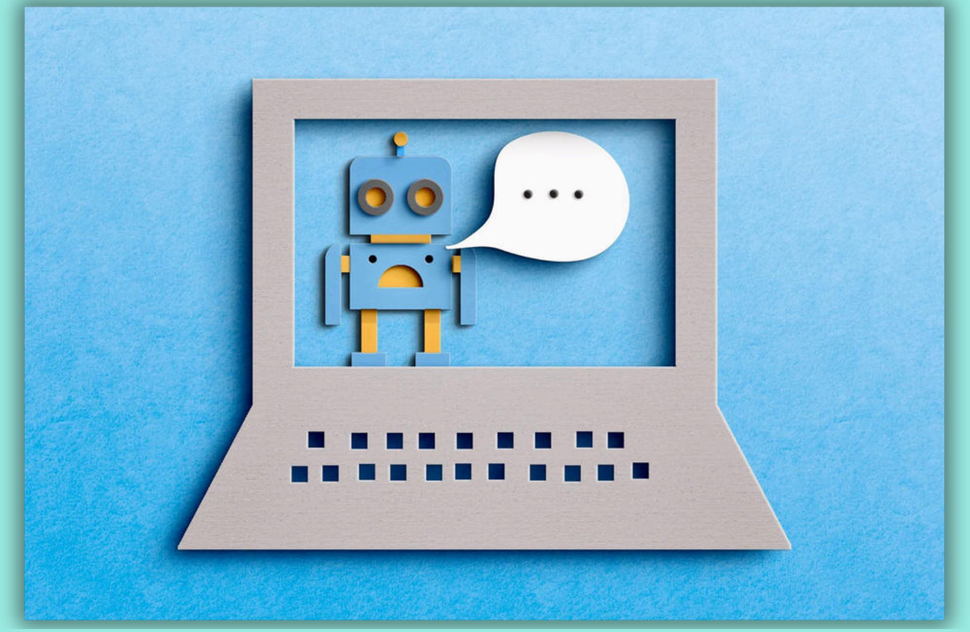
AI CURRICULUM & LESSONS

RESOURCES:

https://www.edutopia.org/article/ai-lesson-plans/

https://thestempedia.com/curriculum/artificial-intelligence-for-kids/

https://wakelet.com/wake/rntfZ13LZ6P183k53iWil



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DREAM, ENGAGE, ACT AND RE-ACT 4 THE FUTURE

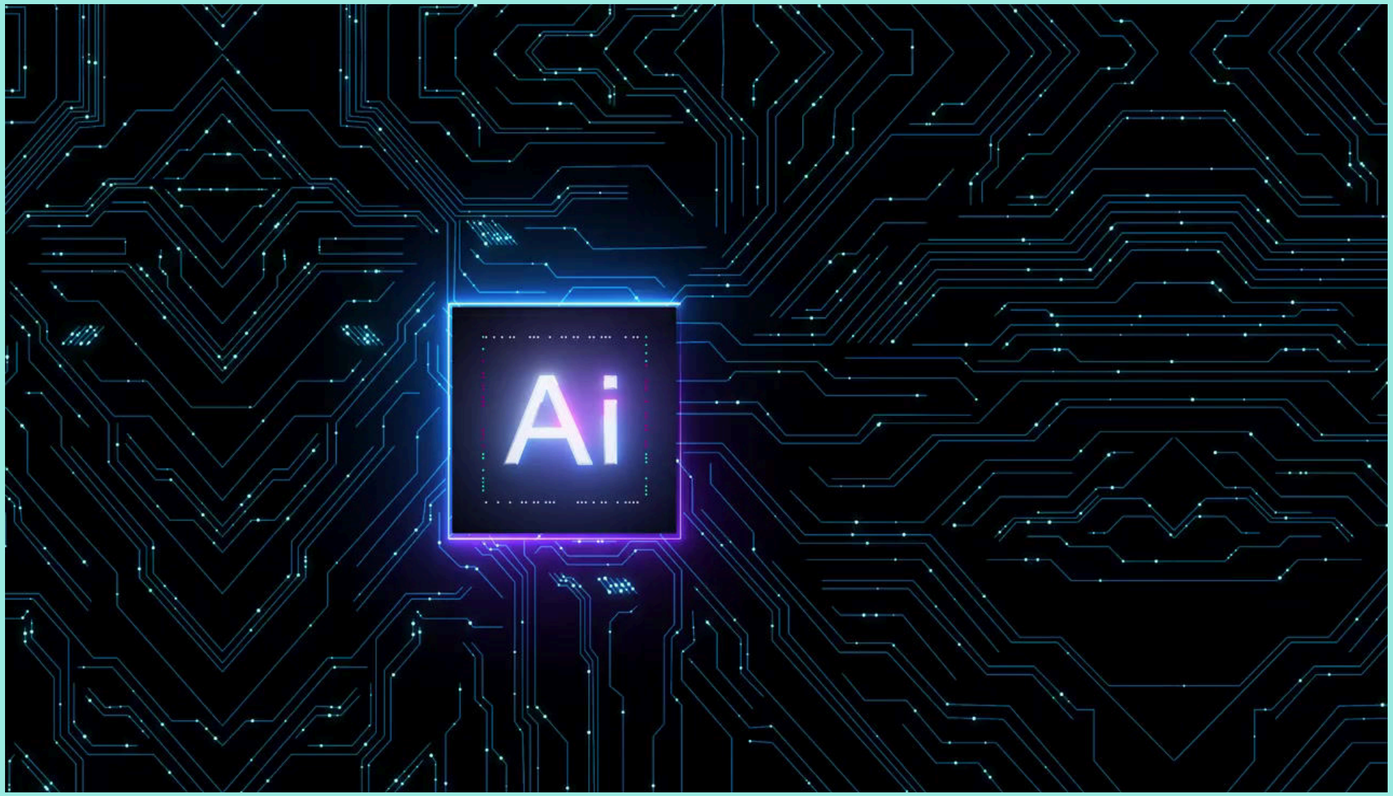
"DEAR FUTURE"

KA220-SCH-7D1AF292

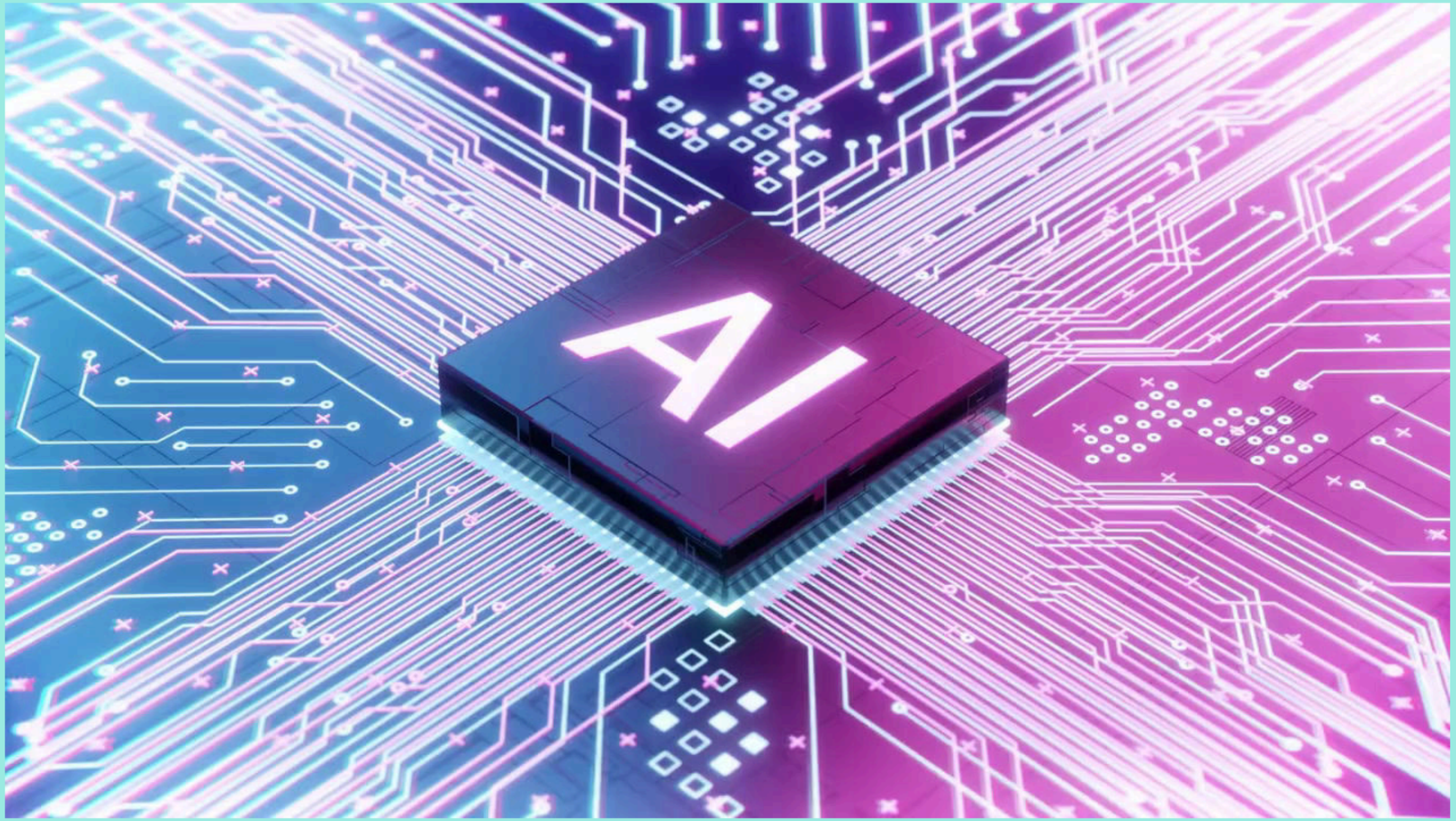
BY ZÁKLADNÍ ŠKOLA ŽELIV, OKRES PELHRIMOV

APPLICATION OF AI IN EDUCATION

GAMIFICATION AND AI IN EDUCATIONI



Gamification and artificial intelligence are two very interesting concepts that can help improve early childhood education.



When properly implemented, these concepts can provide children with an interactive and fun way of learning that supports improved results.

CORE CONCEPTS OF AI

Gamification is the process of applying game elements and mechanics to non-game contexts with the aim of increasing engagement and motivation. In the context of education, these game elements can be used to support interactive learning and increase children's engagement.

Artificial intelligence can be used for personalized learning, which means that each student will have access to learning material that is best suited to their individual needs. Using data analysis and machine learning algorithms, artificial intelligence can identify a student's weaknesses or strengths and tailor the learning content to meet their needs.

Within gamification, artificial intelligence can also provide feedback based on analysis of student performance in various tasks and activities. This feedback can be personalized for each student and may include recommendations and tips for improving performance.

Artificial intelligence also allows for more accurate and detailed tracking of student progress. By analyzing data on performance and progress in gamified activities, teachers can better understand how students are working and their performance in different areas. This allows teachers to plan their teaching more effectively and provide feedback tailored to individual students.

The use of artificial intelligence in combination with gamification can therefore bring many benefits to teaching, such as personalized learning, improved feedback, and tracking of student progress. This can lead to better student performance and improved learning outcomes.

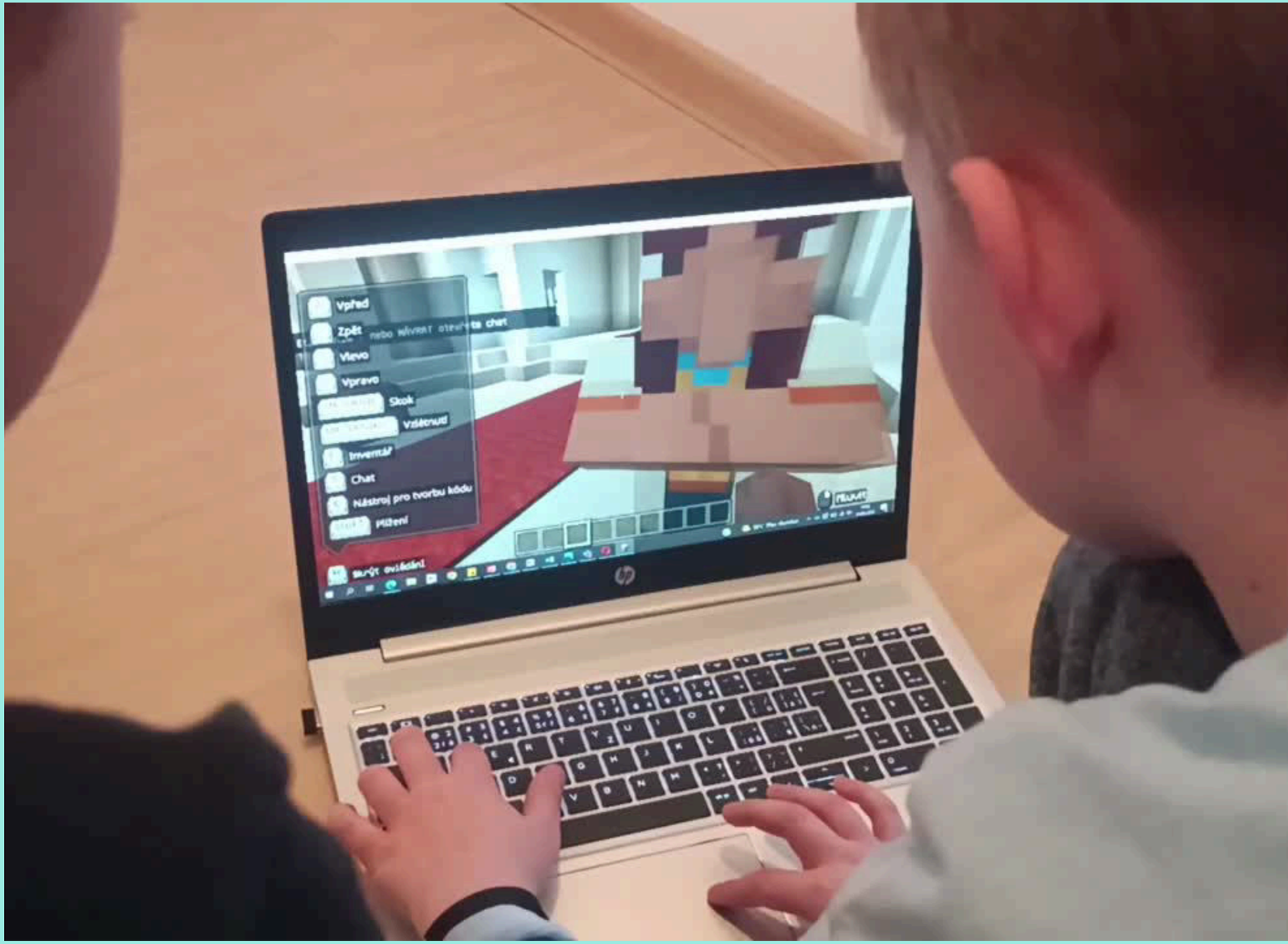
EXAMPLES OF AI AND GAMIFICATION

DUOLINGO

- free language-learning app
- fun and interactive way to learn a new language.
- learning at your own pace and track your progress
- personalized learning
- lessons tailored to your individual learning style and interests

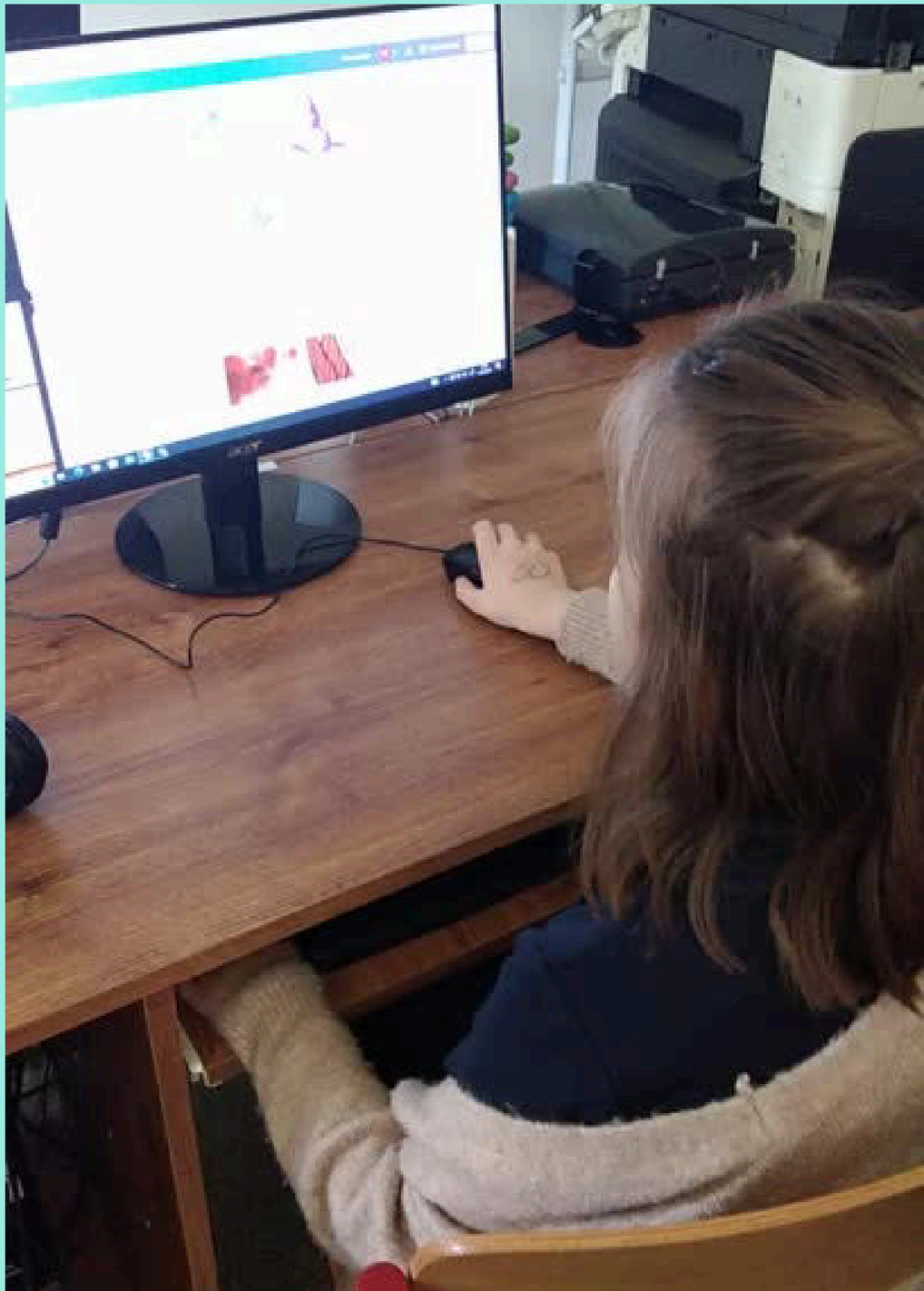
MINECRAFT EDUCATION

- game based platform that inspires creative
- inclusive learning through play
- it can be used to enhance learning across a range of subjects



CANVA

- Canva is a user-friendly graphic design tool, free for students and teachers
- Canva offers a wide range of customizable templates, graphics, and images
- allows for collaboration, making it easy for students to work together on group projects

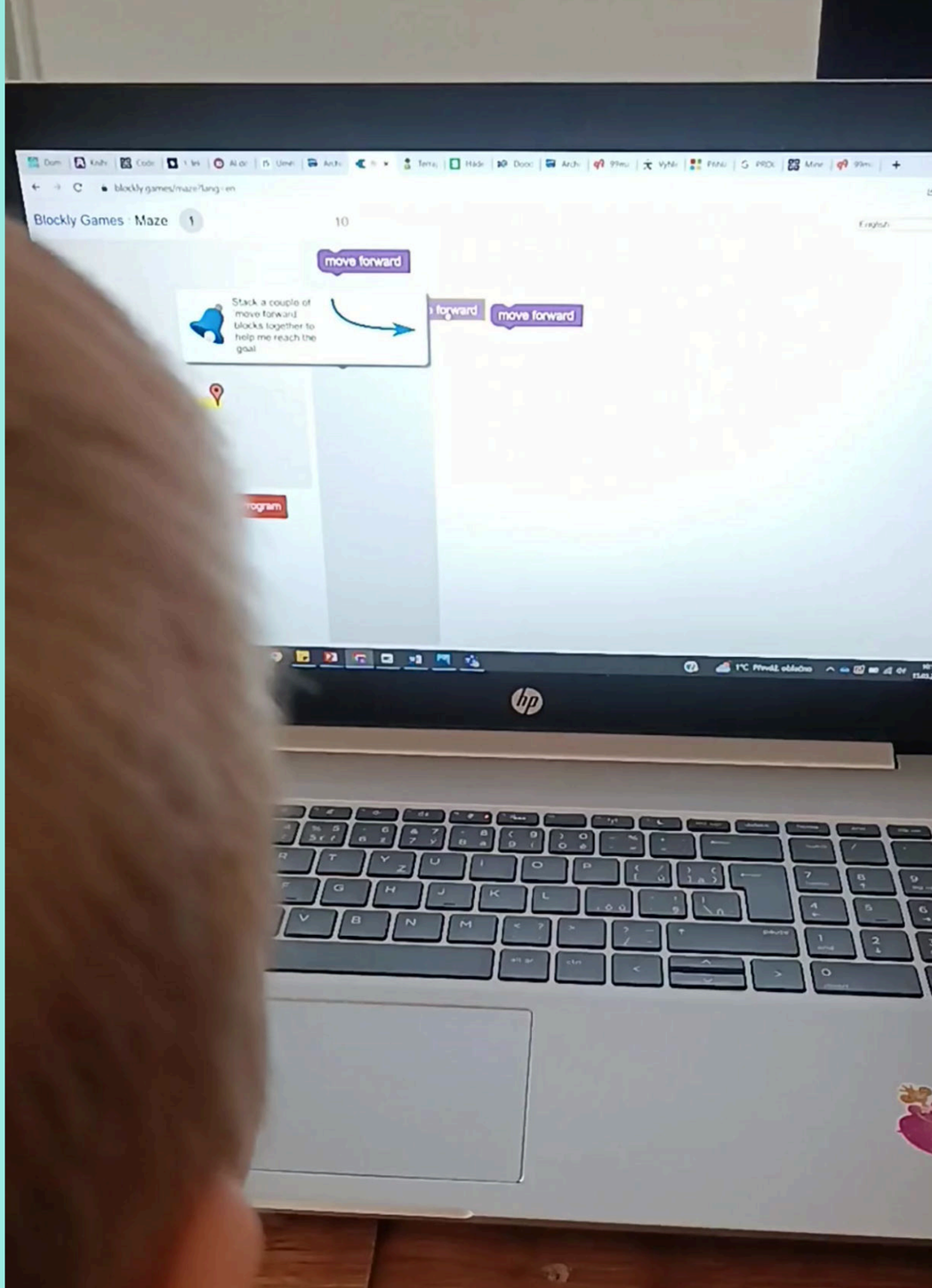


CODE.ORG

- website focused on logical thinking in connection with teaching programming in the form of a game
- option for class creation and management
- lessons are graded
- subject: IT
- language: all languages

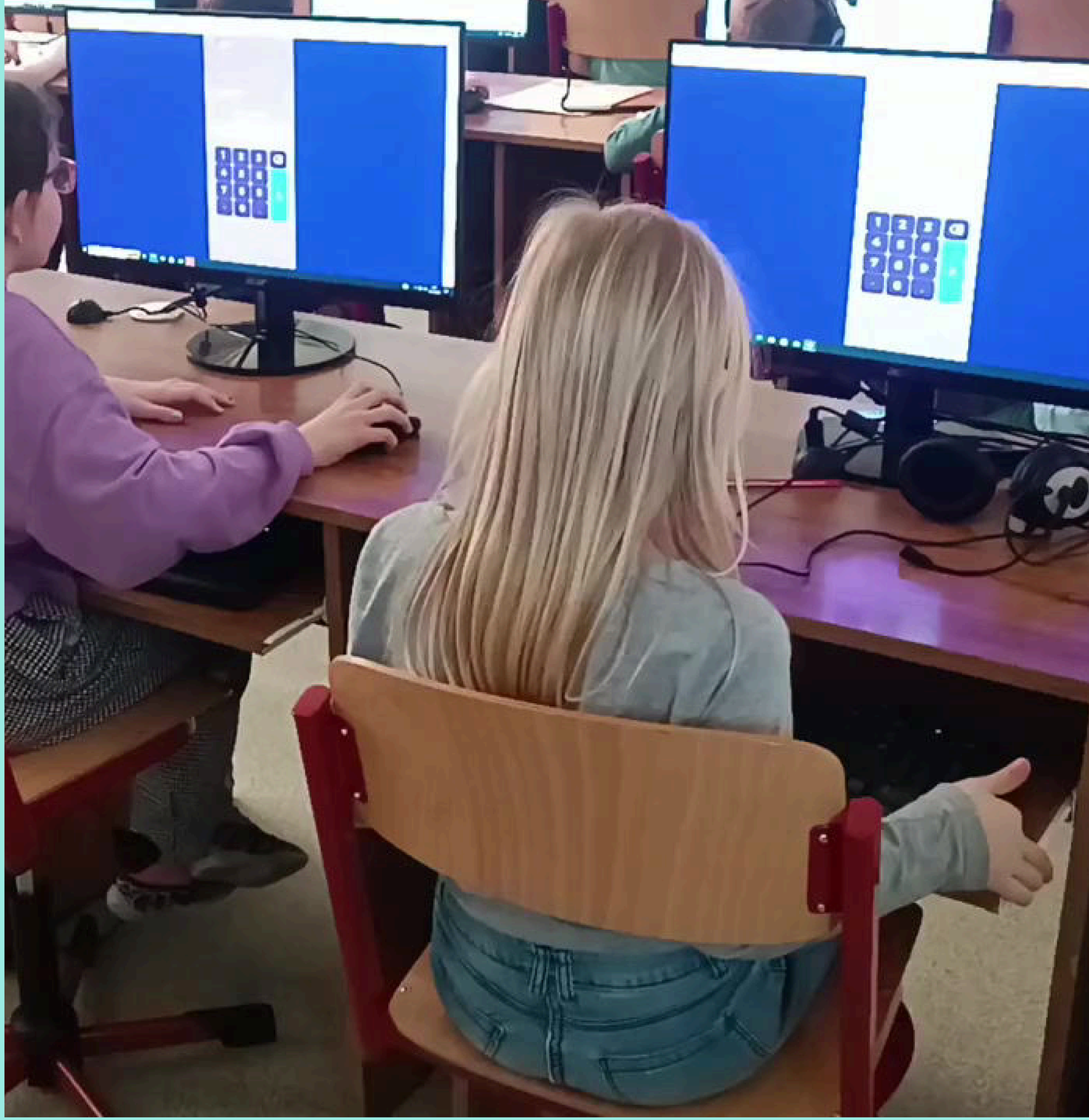
BLOCKLY GAMES

- **Series of educational games, that teach programming**
- **Intended for children without programming experience**
- **Subject: IT**
- **Language: All languages**



99MATH

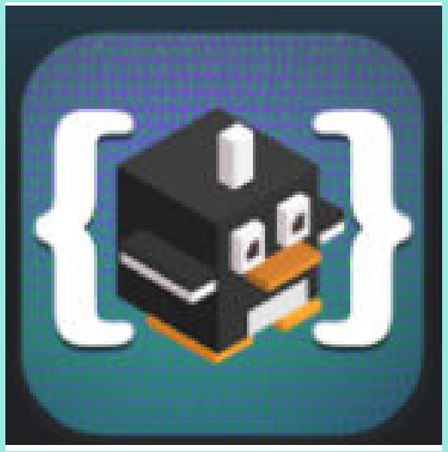
- website enabling via web interface send examples of selected parameters (from teacher to pupils)
- pupils compete with each other
- you can show an evaluation at the end of each lesson (with listed mistakes)
- the application is suitable for home training/practicing
- subject: Math
- language: English



QUIZLET

- simple learning tools for study anthing
- pupils compete with each other
- learning with flashcards, games and expert-written solution
- the application is suitable for home training/practicing
- subject: everything
- language: English (every)

ALGORITHM CITY: CODING GAME



- basics of creating algorithms
- racticing and developing concentration and patience
- subject: Information technology (IT)
- language: English

LITTLE DOT ADVENTURE

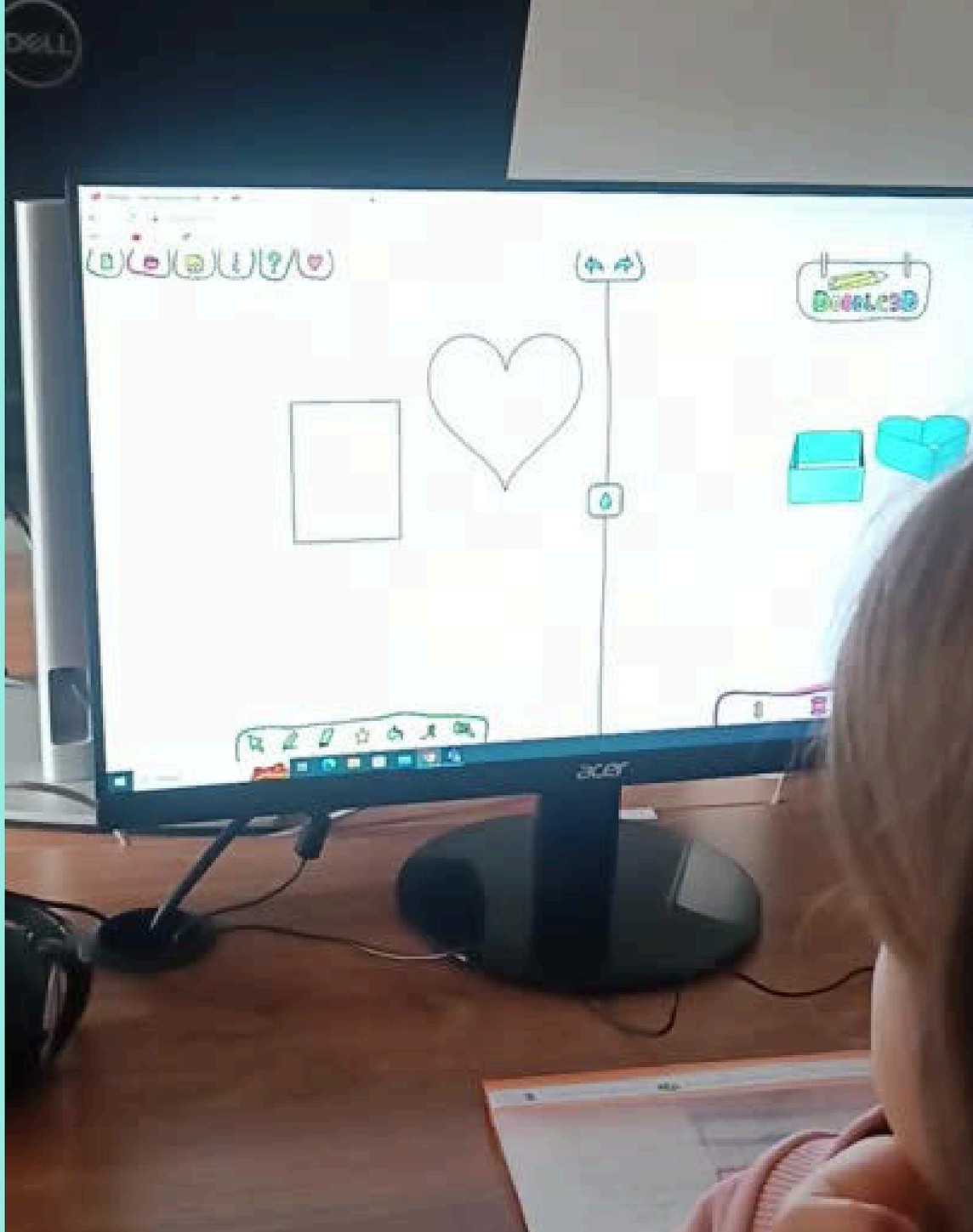
- predictability and discovering of programming concepts
- selection and creation of codes
- solving challenges
- for individual work, cooperation of two persons and multi-member groups
- subject: English and IT
- language: English

COMPUTE IT

- let’s go to change roles – You are the computer, now!
- read and interpret programs to find right way and win
- development of concentration
- basic programming concepts with help of game
- suitable for smallest children
- for individual work or multi-member groups
- subject: IT
- language: English

DOODLE3D

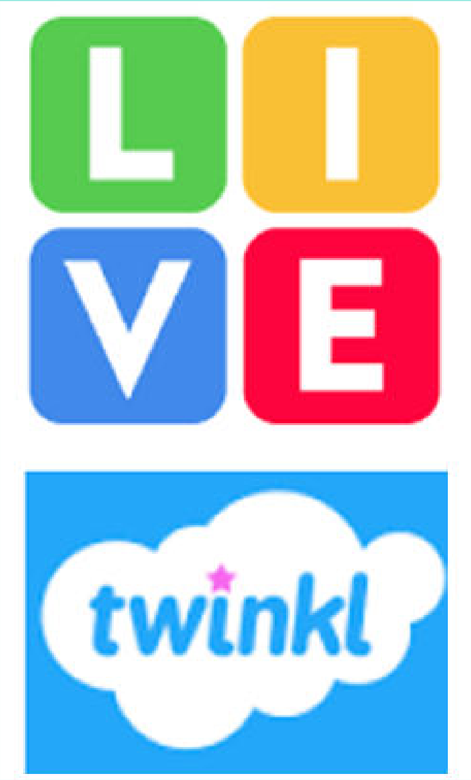
- web application for 3D creation of objects
- involving of small children in the work with geometric shapes and dimensions
- application using icons, very simple tutorial in English
- subject: Art and IT
- language: English



STERRAL WRITING

- online application for learning fast typing
- correct fingering
- increasing speed – motivation
- subject: Czech language and IT
- language: Czech

LIVEWORKSHEETS, TWINKL



- website offering interactive worksheets
- possibility of creating own sheets or use sheets already prepared
- subject: All subjects
- language: English

BLUE-BOT EMULATOR

- online environment for working with the virtual Blue-Bot
- Several templates available for robot movement
- Subject: IT
- Language: English

BLUE-BOT APPLICATION

- Application that allows you to write an algorithm and send it to Blue-Bot
- Subject: IT
- Language: English

BLUE'S BLOCS

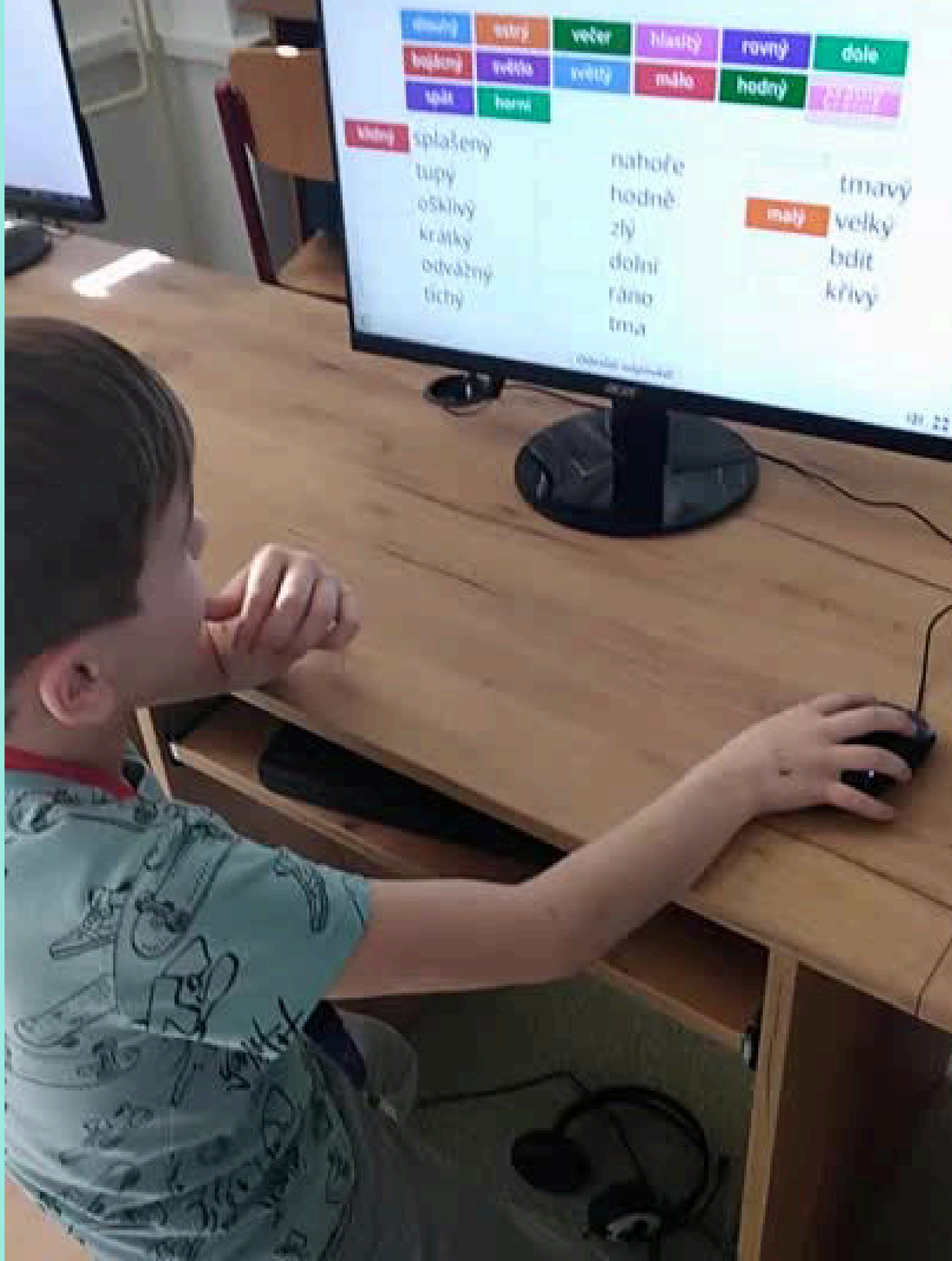
- Application intended for programming Blue-Bot through blocs
- Subject: IT
- Language: English

BOTLOGIC

- Educational logic game to solve logical problems through programming
- Children program robots in mazes using simple commands
- Lessons are graded (increasing difficulty)
- Subject: IT
- Language: English

WORDWALL

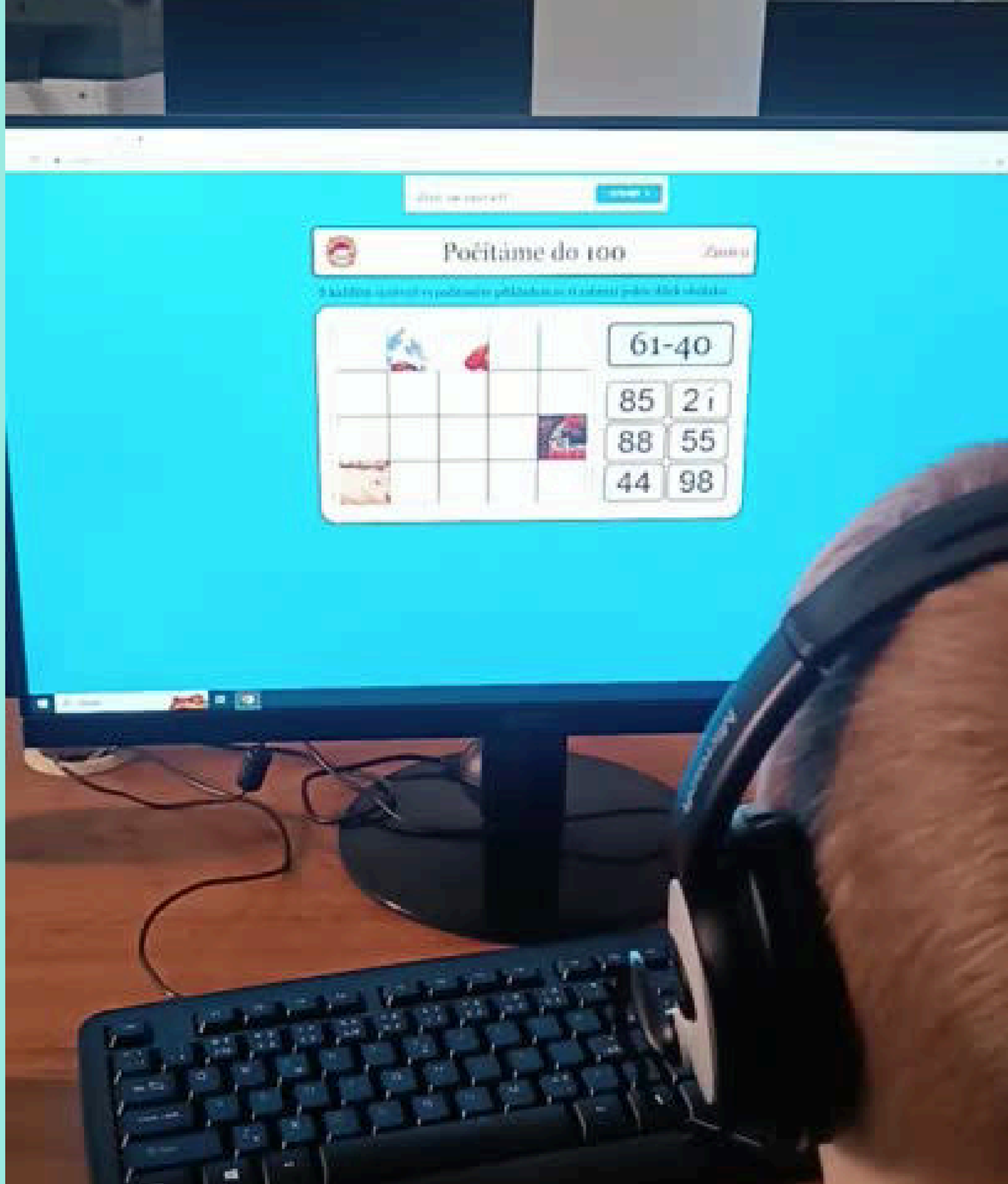
- Web portal for teachers
- Number of individualized activities
- Possibility of creating quizzes and own exercises
- Subject: IT and other subjects
- Language: All languages



UMIMETO.ORG

SKOLAKOV.EU

- Czech web portals for practicing of all subjects
- Possibility of assigning homework and monitoring work
- Subject: All subjects
- Language: Czech



RESOURCES

- eduteam.cz
- videos from Canvaeducation and Základní škola Želiv

How to present to children of age 4–6 years of artificial intelligence?

Artificial intelligence is a technology that imitates and adapts certain features of human thinking. Find out how to introduce it to preschool children in a fascinating way!

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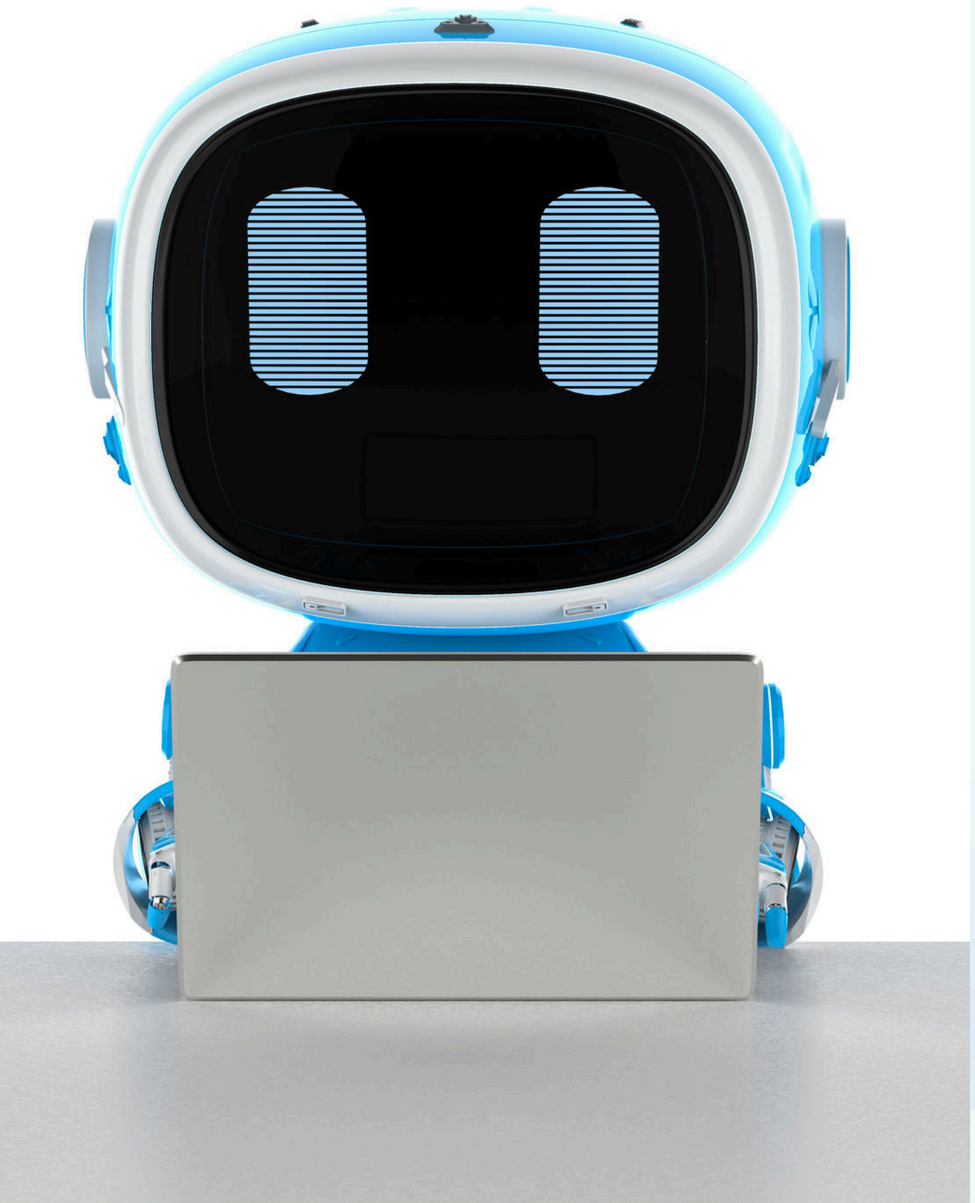

What is artificial intelligence?

Artificial intelligence (AI) is the science of creating computer systems that can perform tasks that require human intelligence. Examples include: speech and image recognition and decision making.

Funded by
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Artificial intelligence in everyday life

Artificial intelligence is already present in our lives. We use it in voice assistants, self-learning algorithms that suggest movies and purchases, and even in autonomous cars. AI has a huge impact on our society and our lifestyle.

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Why is it worth introducing artificial intelligence to children?

1 Cognitive development

Artificial intelligence develops children's cognitive and logical skills, such as critical thinking and problem solving.

2 Preparing for the future

AI will play an increasingly important role in the future workplace. Introducing it to children from an early age will allow them to acquire skills needed in the future.

3 The joy of learning

Playing with AI in learning can arouse children's curiosity and interest, which allows them to better absorb knowledge.

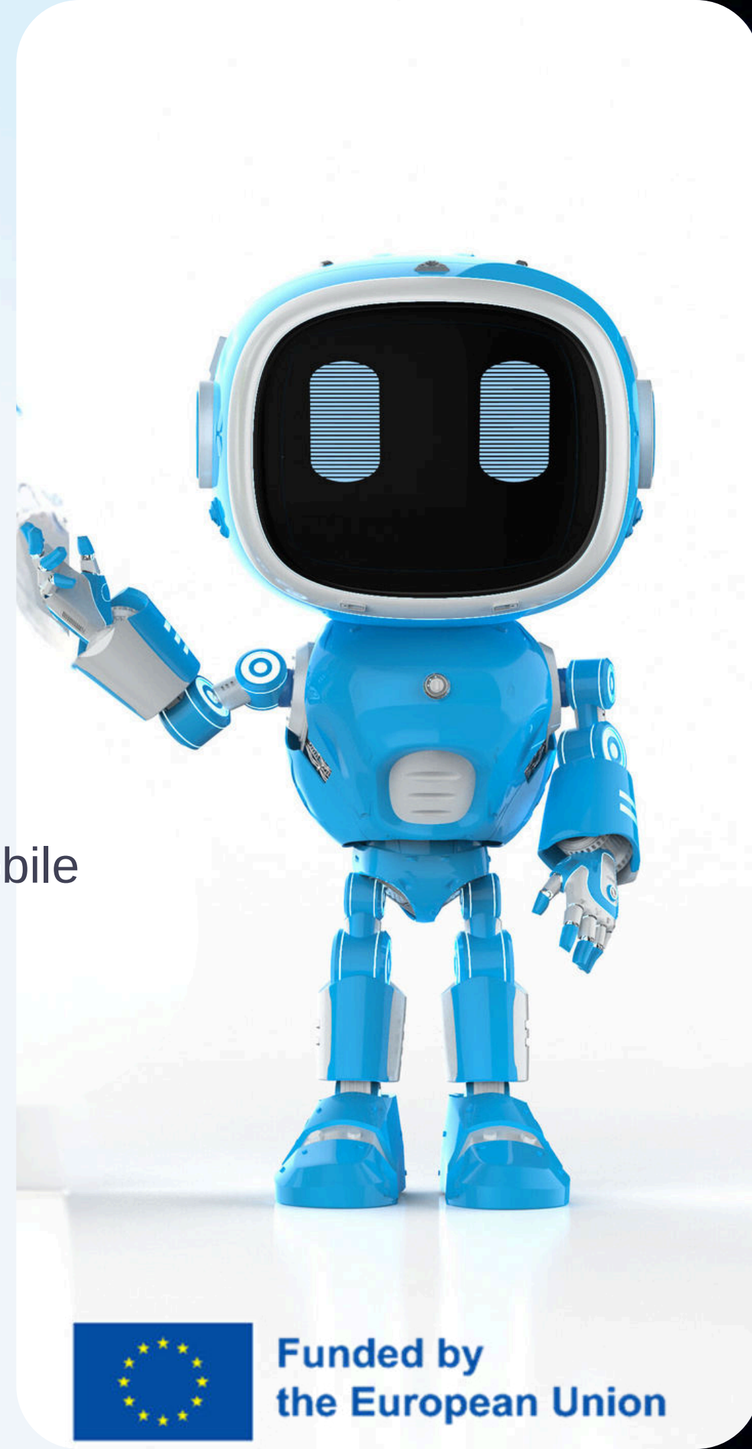
Funded by the European Union

How to introduce artificial intelligence to children aged 4–6?

1. **Interactive games**
   Provide children with access to educational games and toys that develop logical thinking and programming skills.

2. **Friendly forms**
   Use age-friendly and age-appropriate tools such as robotics or mobile apps that engage children in learning and exploring AI.

3. **Learning through play**
   Create games that teach children about how AI works, such as reading emotions or recognizing colors.



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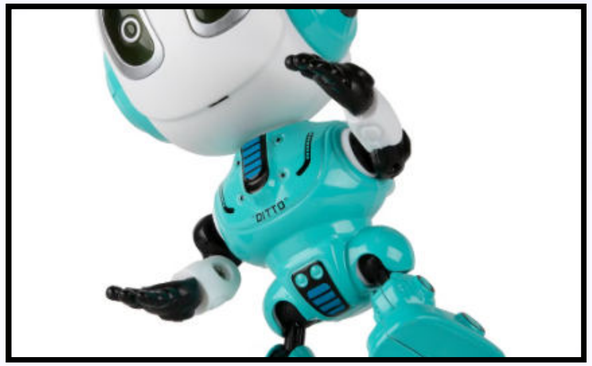
Fun and games related to artificial intelligence

Coding for kids

Encourage children to learn the basics of coding through simple games and puzzles.



Educational robotics

Recommend educational robot toys that teach children the basics of programming and AI in an interactive way.

Interactive applications

Introduce children to AI apps that provide interactive experiences and playful learning.

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Ethics and safety in the context of artificial intelligence for children

Data privacy

Advise children how to protect their personal information and be aware of how AI may use it.

Ethical decisions

Show children how to make responsible decisions when using AI systems and how to recognize and avoid influences on their thinking and behavior.

Technology control

Help children understand that they are the controller of technology, not the other way around, and that they have the right to turn off or reject AI tools at any time.

Benefits and potential threats of artificial intelligence for preschool children

Benefits	Threats
Cognitive and creativity development	No control over personal data
Preparing for the future	Reducing direct social contact
Interactive learning and fun	Lack of direct experience and exploration

Remember to balance the benefits and risks of AI for children this age. Be mindful of their privacy and promote healthy technology habits.

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Learning & Teaching Materials

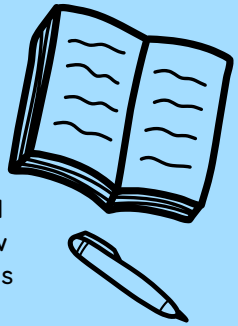
01

Video Materials

Following videos are useful to improve our AI comprehension.

02

What is AI?

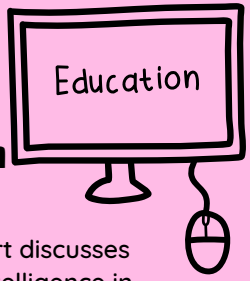


This video on "What is Artificial Intelligence" will give you a brief overview of artificial intelligence as a technology in just 5 minutes.

Link:
https://www.youtube.com/watch?v=ad79nYk2keg&t=198s

03

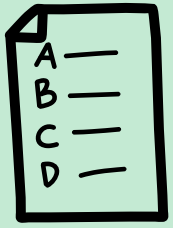
How is AI used in education?



In this video, the expert discusses the role of artificial intelligence in education and explores the roles of teachers and intelligent machine to make learning a better experience for everyone.
Link:
https://www.youtube.com/watch?v=xW1jg1UiVwo

04

11 of the best AI tools



Add AI Tools at any part of your teaching routine. From lesson planning, presenting, and to automating tasks, AI can help! Watch to see how you can use these 11 best AI tools in your classroom!

Link:
https://www.youtube.com/watch?v=KG4_CYbVpTo

05

What is the difference?

With AI thrown around as a buzzword these days, it's important to have a solid understanding.
Link:
https://www.youtube.com/watch?v=J4Qsr93L1qs

06

AI in Education

AI can analyze a student's strengths, weaknesses.
Link:
https://www.youtube.com/watch?v=MFnn2zj3byA

07

Machine Learning

How does machine learning work? What kind of jobs will robots do, what about humans? How do computers learn?
Link:
https://www.youtube.com/watch?v=Wm1Id-vEX3U

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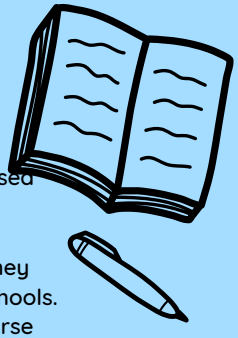
Educational AI Resources

01 eCraft2Learn

Ken Kahn has created resources to allow beginners to create AI programs in Snap! (a visual programming environment similar to Scratch). eCraft2Learn has fantastic resources that dive deep into how ML systems actually work.

02 Apps for Good

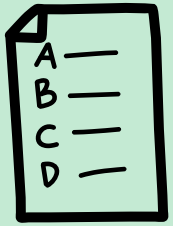


Apps for Good are a UK-based not-for-profit that creates resources for teaching technology subjects, that they make freely available to schools. Their Machine Learning course uses Machine Learning for Kids, and supplements it with a range of additional materials like schemes of work, lesson plans, student workbooks, presentations and more.

03 STEM Learning

STEM Learning and the UK Department for Business, Energy and Industrial Strategy have created resources for teaching the principles of artificial intelligence. These resources include Machine Learning for Kids projects, supplemented with teaching notes, presentation materials, prompt cards, and practical "unplugged" activities.

04 AI Family Challenge



The AI Family Challenge is a free, hands-on AI education program for families. They use Machine Learning for Kids, and supplement it with a lot of additional support, such as technical coaches and mentors, a structured lesson plan and supporting videos. The program is based around a competition that challenges children to think of their own AI project ideas, with the support of their families and technical mentors.

05 Raspberry Pi

The Raspberry Pi Foundation provides resources for Code Clubs, with step-by-step instructions for a variety of creative projects. Their machine learning pathway includes a variety of projects from Machine Learning for kids.

06 magenta.js demos

Online toys that demonstrate different aspects of machine learning, using TensorFlow.js.

07 Quick, Draw!

Quick, Draw! is an online game developed by Google that challenges players to draw a picture of an object or idea and then uses a neural network artificial intelligence to guess what the drawings represent.

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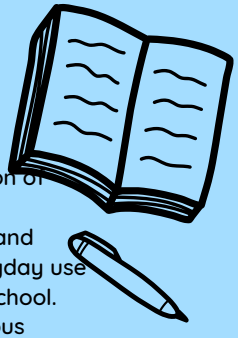
Educational AI Resources

08

Learning Bits

No previous coding or programming experience is needed, and each module takes only around 15 minutes to complete. The modules introduce you to key concepts related to coding and computational thinking activities. In addition, the modules also give you practical tips and advice on how to integrate the concepts in your classroom.

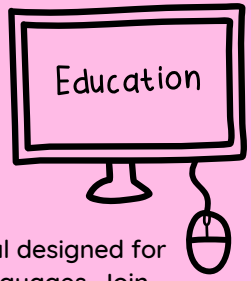
09



Coding@Home

Coding@Home is a collection of short videos, do-it-yourself materials, puzzles, games, and coding challenges for everyday use in the family as well as at school. You do not need any previous knowledge or electronic devices to do the activities. The activities will stimulate computational thinking and cultivate the skills of pupils, parents and teachers at home or in school.

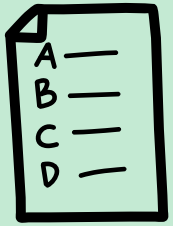
10



Hour of Code Activities

Try a one-hour tutorial designed for all ages in over 45 languages. Join millions of students and teachers in over 180 countries starting with an Hour of Code.

!



Try it all out!

Try all the resources, and tell us which one is the best for the children AI education!

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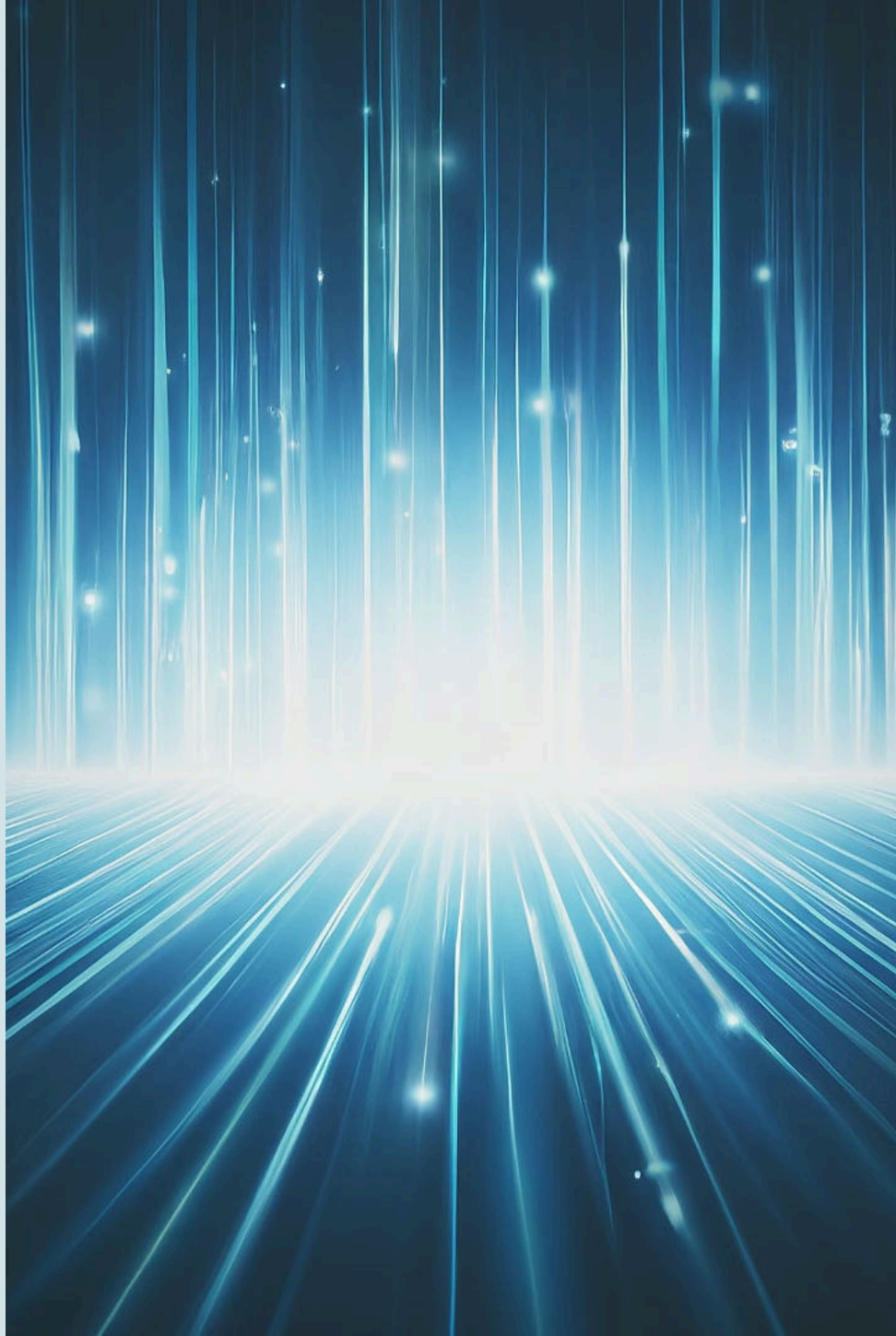
Introduction to Artificial Intelligence

Artificial Intelligence (AI) is a fascinating and rapidly developing area of research that has the potential to transform many aspects of our lives. Provides background information on the history, concepts, and applications of AI to begin your journey into this dynamic world.



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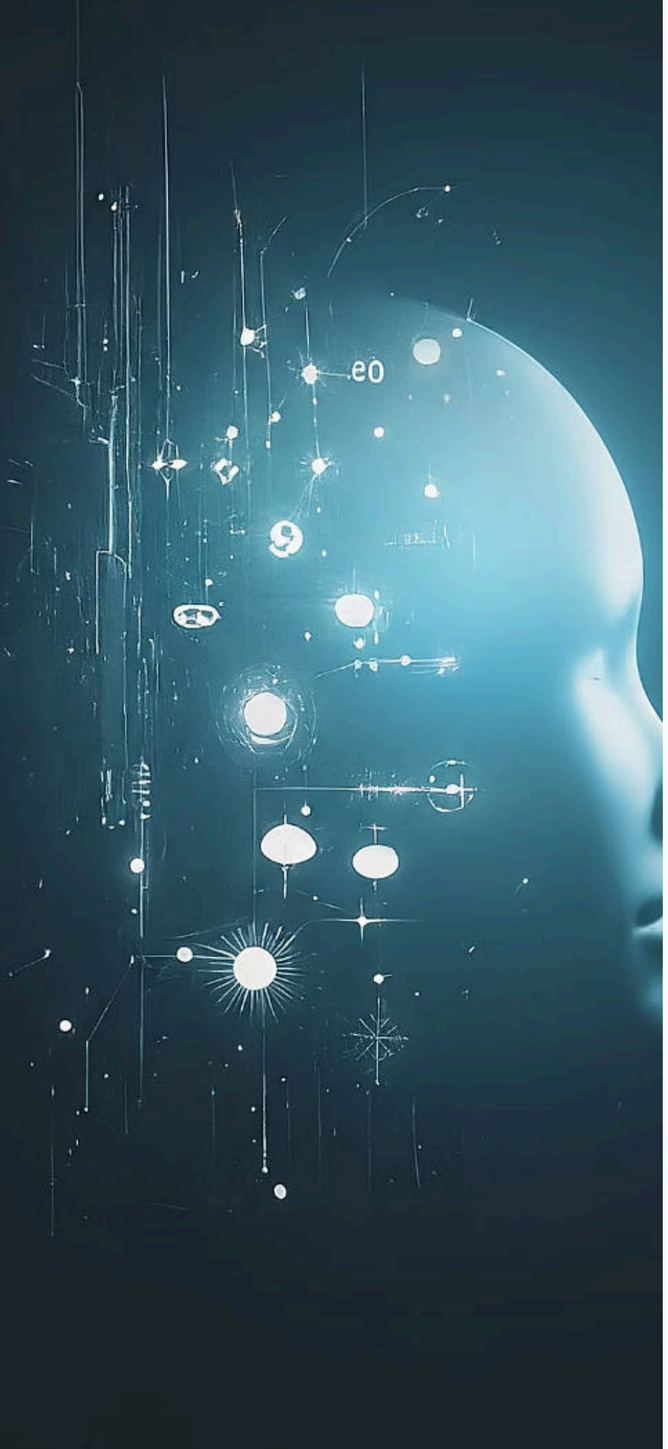

History of the development of Artificial Intelligence

Beginnings

The concept of AI emerged in the 1950s with the pioneering research of scientists such as Alan Turing and John McCarthy.

1960s and 1970s

During this period, there was significant development in AI, including the creation of chess programs and expert systems.

Boom and bust

The 1980s saw an AI boom, but the 1990s saw a period of stagnation known as the "AI Cold War."

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Basic concepts and methods of Artificial Intelligence

Machine Learning

Systems that learn from data to create predictive models and make decisions.

Neural networks

Structures inspired by the human brain, capable of learning and pattern recognition.

Data Science

Analyzing and interpreting large data sets to draw meaningful conclusions.

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Applications of Artificial Intelligence

1 **Image recognition**

Identification and classification of objects in photos and videos.

2 **Recommender systems**

Personalizing content and products based on user preferences.

3 **Process Automation**

Streamlining and optimizing everyday tasks and business processes.

4 **Medicine and health care**

Supporting the diagnosis, treatment and monitoring of patients' condition.

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Challenges and limitations of Artificial Intelligence

Trust and transparency

The need to ensure that AI is reliable and understandable to users.

No data

Difficulties in training AI when appropriate, high-quality data sets are lacking.

Ethical problems

Dilemmas related to issues such as privacy, impartiality and responsibility.

Technological limitations

The limits of current AI capabilities, especially in terms of context understanding and creativity.

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Ethics and responsibility in Artificial Intelligence

1

Clarity

AI systems should operate in an understandable and predictable manner.

2

Impartiality

AI algorithms must be free from bias and discrimination.

3

Responsibility

It is crucial to define who is responsible for AI decisions.

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The future of Artificial Intelligence

General Intelligence

Developing AI that will match or exceed human cognitive abilities.

autonomy

Increasing the independence and decision-making capacity of AI systems.

Machine Learning

Further development of ML algorithms, including deep learning and reinforcement learning.

Neuron network

Improving neural network architectures to increase their performance.

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Summary and Conclusions

Key challenges

- Trust and transparency
- No data
- Ethical problems
- Technological limitations

Ethics and responsibility

- Transparency
- Impartiality
- Responsibility

Development prospects

- General Intelligence
- Autonomy
- Development of Machine Learning
- Progress in Neural Networks

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The comic book for children 4-6 years old on the topic How can machines be educated?

Title of the comic book: **"The Adventures of RoboBear: How to Educate Machines?"**

Page 1:

• Panel 1: A photo of a smiling RoboBear, an adorable teddy bear-shaped robot.

Narrator: "This is RoboBear! RoboMisio is a machine!"

Panel 2: Picture of RoboBear with an open book and a pencil. RoboBear tries to write something down in his "science book".

Narrator: "RoboBear wants to learn and grow!"

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Page 2:

Panel 1: An image of RoboBear sitting next to a laptop with a large shield on the screen. Various objects are visible on the dial.

Narrator: "RoboBear learns using a computer!"

• Panel 2: An image of RoboBear examining various objects such as books, tools, and puzzles.

Narrator: "RoboBear is experimenting and researching things!"

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Page 3:

• Panel 1: An image of RoboBear surrounded by other robots and children. Everyone works together to build something with blocks.

Narrator: "RoboBear works with other machines and people!"

• Panel 2: A picture of RoboBear drawing his new friend - RoboSquare - on a piece of paper.

Narrator: "RoboBear even draws his own machines!"

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Page 4:

Panel 1: An image of RoboBear and other machines celebrating success - the completion of a large project.

Narrator: "RoboBear and his friends did something amazing!"

Panel 2: An image of RoboBear giving his "science book" to other machines and children so that they can also learn.

Narrator: "Now RoboBear shares knowledge so that everyone can educate machines!"

This short comic book is kid-friendly and introduces them to the concept of learning and developing machines through experimentation, research and collaboration with others. Comics can be used as a tool to talk to children about technology and technical education.

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IDEA BOX

Duration: 40 mins
Target group: 3-6 years old
Required Materials: Cardboard box, paper, pen, crayons, PC, projector

Let's use our imagination!

1

Teacher finds a cardboard box in which students will put their ideas.

2

Teacher writes terms related to AI then gives away a piece of paper to each student

3

Students write or draw their ideas and put them in to the box.

Teacher displays all the ideas on the jamboard through a projector.

What do students think/imagine about AI?

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5 USE CASES OF HOW AI CAN BE APPLIED IN EDUCATION

1

Interactive Tutoring

With the help of AI and ML, a remote help will be quite easy to find regardless of time and location.

2

Automation and Speeding of Teacher's Tasks

Carrying out clasroom management and organizational tasks in addition to major education-oriented duties might be too much for teachers. AI can help grade homework, evaluate essays etc. hence eliminating routine tasks.

3

Personalization

AI systems are being used to tailor and personalize learning for each individual student. AI systems are being used to develop a custom learning profile of each student and customize the training materials based on the student's ability, preferred mode of learning, and experience.

4

Smart Content

AI systems can condense content of a simple textbook into a more digestible study guide.

5

Identification of Learning Gaps

The use of AI algorithms can monitor students' actions and answers to the questions, and help identify which concepts the teacher needs to re-taught.

AI EDUCATIONAL RESOURCES FOR TEACHERS

Tools using artificial intelligence to create educational materials

NOTES GPT

https://usenotesgpt.com

GPT Notebook is a tool that uses artificial intelligence to summarize, extract and organize content from videos, articles and texts. It also offers features such as Q&A, chat, transcription, flashcards and sharing to increase learning efficiency and collaboration. GPT Notebook allows you to instantly summarize long videos, articles and texts. The tool allows you to ask questions and get answers.

VIDNOZ AI TOOLS

https://www.vidnoz.com

VINDOZ is a platform that allows you to create videos using artificial intelligence (AI). It allows you to create videos based on simple text prompts. You can transform text into eye-catching videos in just a few minutes. The tool allows you to generate voices using Text to Speech in many languages and accents. Videos can be created from local files, selected from a rich library of music, images, animated icons.

TYPE FRAMES

https://www.typeframes.com

Type Frames is a tool that allows you to create videos using simple text prompts. With it, you can transform text into impressive videos in just a few minutes! Typeframes allows you to generate videos based on short texts. You can create a video for YouTube, Instagram or TikTok.

GRADESCOPE

https://www.gradescope.com/

Gradescope, in turn, is an online platform that helps teachers assess the work of students. Thanks to it, the time needed for assessment can be shortened by 70%. Artificial intelligence embedded in the program groups similar answers and allows them to be assessed together. Additionally, it analyzes students' cognitive problems and indicates where they need additional help.

REDMENTA

https://redmenta.com/pl/

Redmenta is a platform that helps teachers create and assign worksheets using AI support. Teachers can import lessons, notes or articles from any source and then generate engaging learning materials tailored to the curriculum. Redmenta guides the entire process, allowing you to share content with students, track their progress and provide them with feedback.

AUDIO PEN

https://audiopen.ai

AudioPen is an app that transforms voice notes into text that is easy to read and ready to share. It allows you to create notes from collected thoughts, emails, articles and other content. AudioPen can act as a personal assistant that records and summarizes the user's thoughts. It can be used to create journals, messages, tweets, blog posts and other content.

QUIZZE AI

https://chromewebstore.google.com/detail/quizizz-ai-turn-any-websi/jnegnfbcjklhkmoihoakeijbealomipg?hl=pl

Quizizz is a tool that helps you create, improve and analyze quizzes. Quizizz AI allows you to create quizzes thanks to advanced AI technology. Teachers can generate questions from any text: article, book or website. The tool detects grammatical errors and other inaccuracies and allows you to adapt the content to different learning styles. After completing the quiz, you receive data on students' skills and recommendations for individual exercises.

CURIPOD

https://curipod.com

Curipod is a platform that helps teachers generate and deliver AI-powered lessons on any topic. It allows you to create slide-style presentations that combine various elements such as surveys, word clouds, drawings, and more. The platform engages students through reactions and comments. Educators can earn their AI certification by taking a 10-hour course on the Curipod platform. This allows you to better use the tool in your work.

TEACHING AI

https://www.teachingaissistant.co.uk

Teaching AI is an advanced system supporting learning and education. It allows you to create interactive educational materials tailored to the individual needs of students. Teaching AI can adapt content to the student's level of knowledge and skills. Teachers can use TAI to create tests, homework assignments, and quizzes. They can use TAI as an assistant to prepare lessons, assess student work, and track progress.

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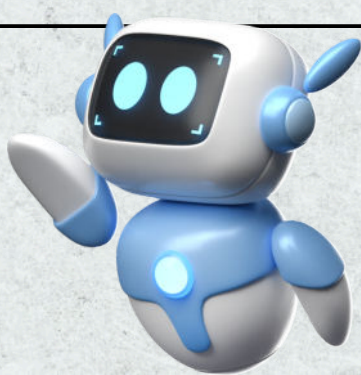
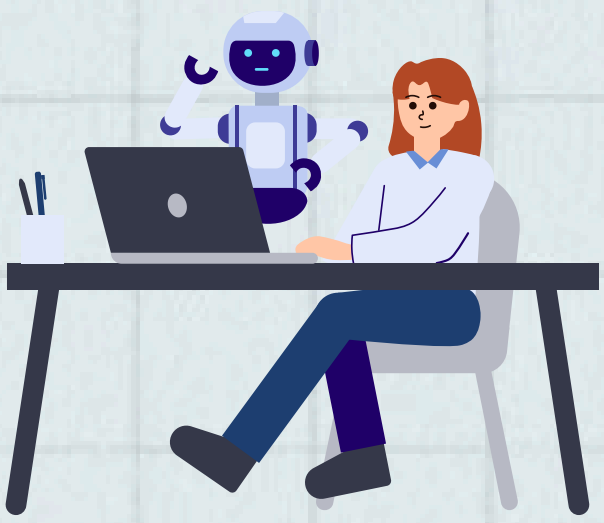


Educational artificial intelligence resources for children

01 ALEKS

is an artificial intelligence-based learning and assessment system for primary, secondary and university students. The well-known educational company MC GrowHill, which currently owns this platform, ensures that learning with ALEKS is at least 90% effective. The student learns as much knowledge from the program as he or she was supposed to have in the time allotted to him by the algorithm.

Link: https://www.aleks.com/index



02 DUOLINGO

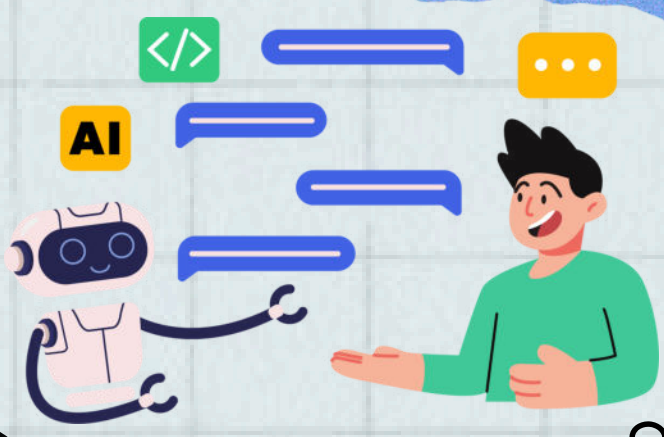
is easily the largest language school in the world. It has no buildings or classrooms and exists only virtually. It offers free courses to learn 24 languages, including Polish. The application has already been downloaded by 500 million people. The school's creators write that they want to create the best education system in the world and provide global access to it. They use artificial intelligence to do this.

Link: https://en.duolingo.com

03 THINKSTER MATH

is a math learning app designed for school-age children. It uses machine learning to visualize how students think when solving math problems. This allows the teacher to quickly identify areas in the child's thinking and logic that need to be worked on.

Link: https://hellothinkster.com



04 BRAINLY

is a global social networking application created by Poles that allows students from all over the world to support each other with their homework, expand their knowledge and learn from each other. The platform uses machine learning algorithms that automatically filter out spam and low-quality content.

Link: https://brainly.com

05 COURSE HERO

is a platform that uses artificial intelligence to help with homework. With the AI course assistant, you can get instant answers and explanations on various study materials.

Link: https://www.coursehero.com

06 BLOCKLY GAMES

is a collection of educational games that help you learn programming. It is not directly based on artificial intelligence, but uses block tools to learn programming. Blockly Games is available for free and is perfect for beginner developers and provides a valuable platform for learning programming.

Link: https://blockly.games/?lang=en

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DEAR FUTURE

LEARNING GOALS

There are three main goals for the "AI for Kids" curriculum.
The AI literacy curriculum aims to enable young children to:

#1	Recognize the basic principle of data processing of AI - the process of inferring results from information;
#2	Understand and apply the basic principle and process of making judgments of AI - synthesizing information and identifying objects according to key elements;
#3	Understand the concept of prejudice, and recognize that AI also has prejudices and errors.

VIDEO MATERIALS

1 What is generative AI and how does it work?

https://www.youtube.com/watch?v=_6R7Ym6Vy_I

In this lecture, Mirella Lapata will provide an overview of generative artificial intelligence - an exciting, sometimes controversial and rapidly developing field.

2 What is Artificial Intelligence?

https://www.youtube.com/watch?v=ttIOdAdQaUE

The film is aimed at children. Dr. Binocs explains in it **What is artificial intelligence?**

3 History of Artificial Intelligence

https://www.youtube.com/watch?v=fBncbUmO-L4

A short video on the history and evolution of artificial intelligence (AI).

4 A brief history of AI

https://www.youtube.com/watch?v=yaL5ZMvRRqE

The Lernende Systeme platform presents the development of artificial intelligence (AI). The video explains and illustrates various stages of technology development and milestones in AI applications and the challenges that will arise in the future.

5 History of AI

https://www.youtube.com/watch?v=RkeweRU_iLg

The film presents the history of artificial intelligence. From computing machines to neural networks, the development of AI is paralleling emerging brain science.

6 Evolution of Artificial Intelligence

https://www.youtube.com/watch?v=ng43Ou2Yna4

From simple algorithms to complex self-learning systems, this is the evolution of artificial intelligence (AI)!

7 AI Is Changing Education Forever

https://www.youtube.com/watch?v=M6nPmytC99Y

The film discusses in detail, how artificial intelligence has a huge impact on education and how it is changing the way we learn and study.

8 Create Personalized Education Projects with AI

https://www.youtube.com/watch?v=ZkSjFuvvVDg

In the video, you'll learn how to build an AI project builder that allows each student to choose a project that excites them and helps them learn about a specific topic.

9 AI TOOLS that make you SMART!

https://www.youtube.com/watch?v=mpgYjTanhNc

The film presents 10 tools using artificial intelligence that can be used in education: both by teachers and students.

10 BEST 5 AI Tools for Teachers | 2023

https://www.youtube.com/watch?v=7iN-dgkxNbE

The author presents his five favorite AI tools for teachers in 2023.

11 10 Best AI Tools for Teachers

https://www.youtube.com/watch?v=TufVorWVF5k

The video presents the 10 best AI tools for teachers, according to the author.

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