

STEMbot:

Your new companion in STEM teaching

13 March 2024, 5:30 to 6:30 PM (Brussels time)

Presented by Dorian Venderick



Co-funded by
the European Union



STEMBOT



LogoPsyCom.



About us...

Logopsycom is an educational innovation centre in Mons (Belgium) that creates and uses alternative methods or tools (digital or otherwise) to support schools, vocational training centres, educational organisations, young people and parents.

It was originally set up as a care company specialising in learning disorders in young people, such as 'Dys' (Dyspraxia, Dysphasia, Dyslexia, etc.). So we're still working on content accessibility and inclusion.



About our work...

We have been supporting inclusive education for years



72+

International projects



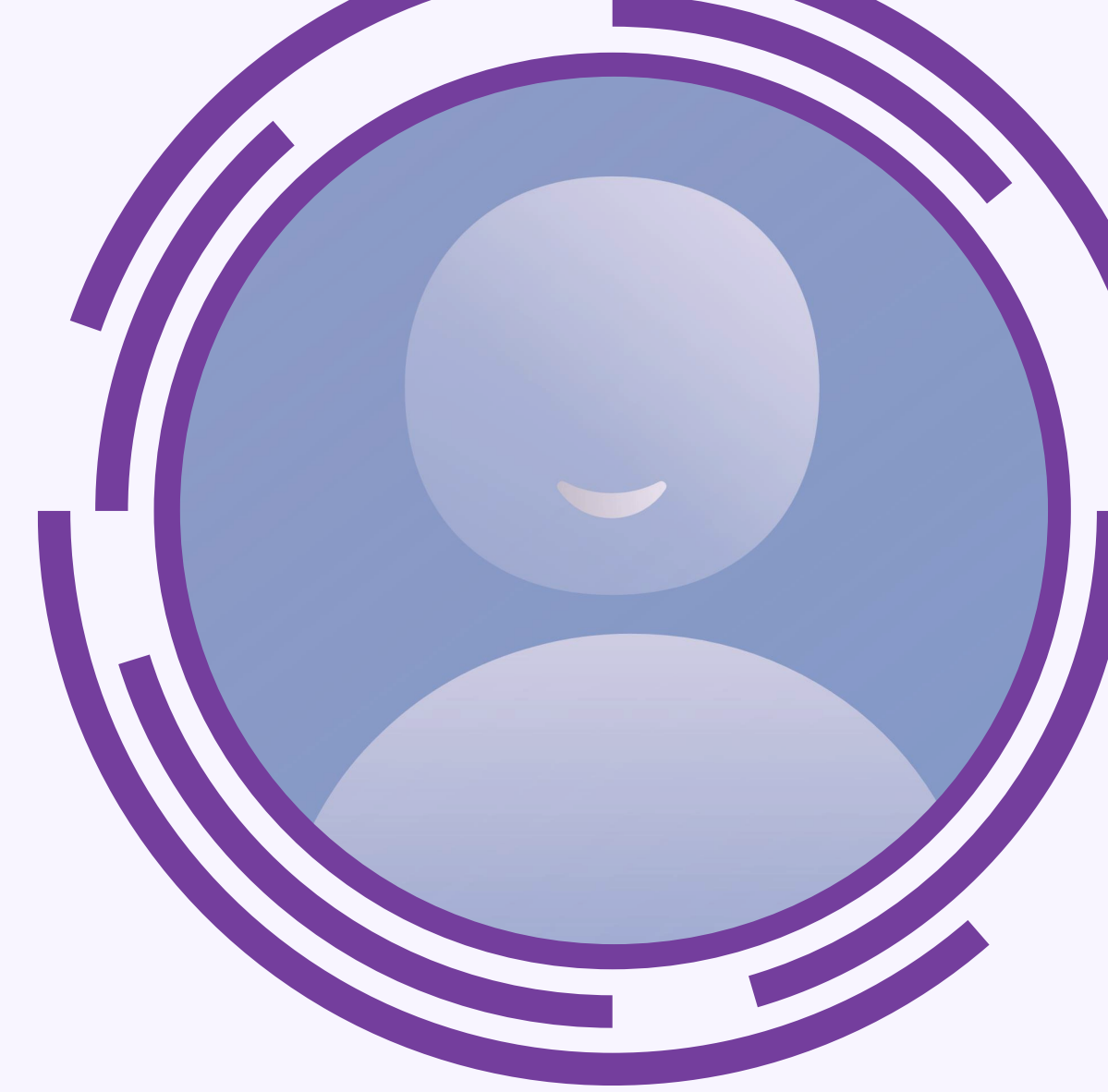
208+

Cooperating
partners



9

Years of experience



Today's plan

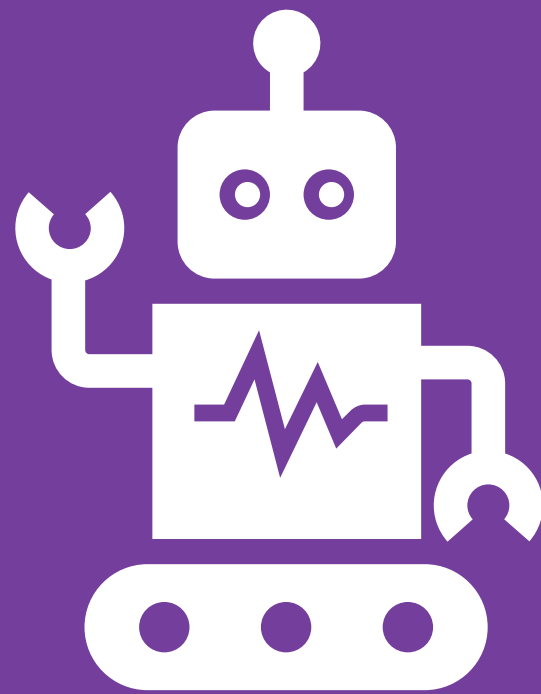
STEMbot: Your new companion in STEM teaching

1. Introduction to the STEMbot project
2. Importance of STEM Education, STEMbot's Mission: Bringing Math and Science to Life
3. Unveiling STEMbot Tools – Introductory guide, Science Experiment Video Tutorials, Lessons
4. Introduction and Demonstration of the STEM bot – Your Chat Companion in STEM
5. Insights from literature and recommendations, creation guide: Empowering Educators to Develop Their Own Chatbots for STEM Learning
6. Q&A and discussion



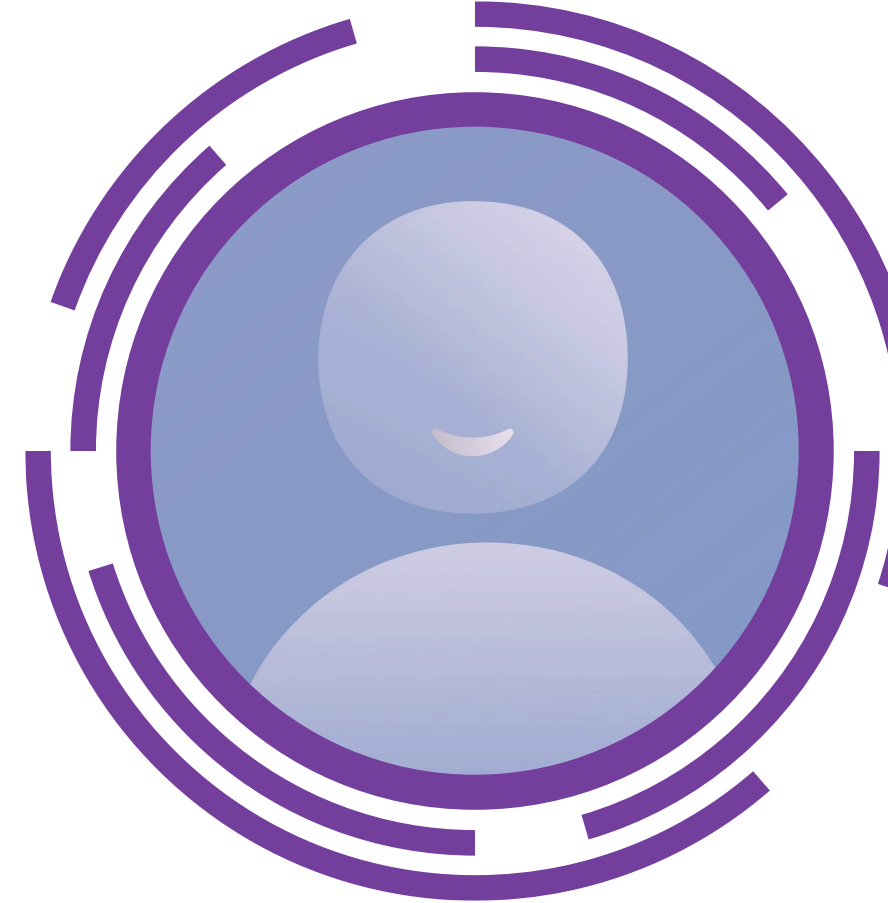
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Introduction to the STEMbot project



Introduction to the STEMbot project

The Partnership Behind STEMbot



FERMAT SCIENCE
Une autre idée des maths

FERMAT SCIENCE
(France)



LogoPsyCom.

LogoPsyCom
(Belgium)



GoINNO

GoINNO Institute
(Slovenia)



CEPROF
(Portugal)



NARVA PÄHKLI MÄE GÜMNAASIUM
(Estonia)



SOU Jane Sandanski Strumica
(North Macedonia)



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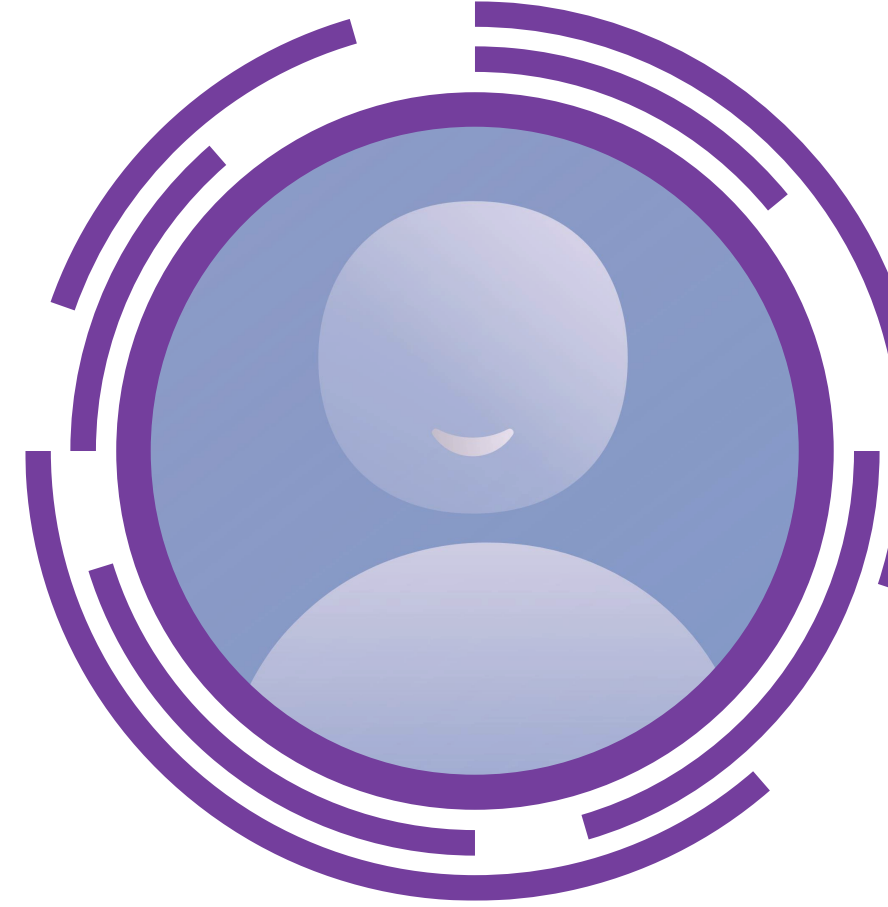
Introduction to the STEMbot project

Why STEMbot?

1. Disengagement and underperformance in STEM subjects among secondary students
2. Need for innovation in teaching STEM to make it more engaging and relevant



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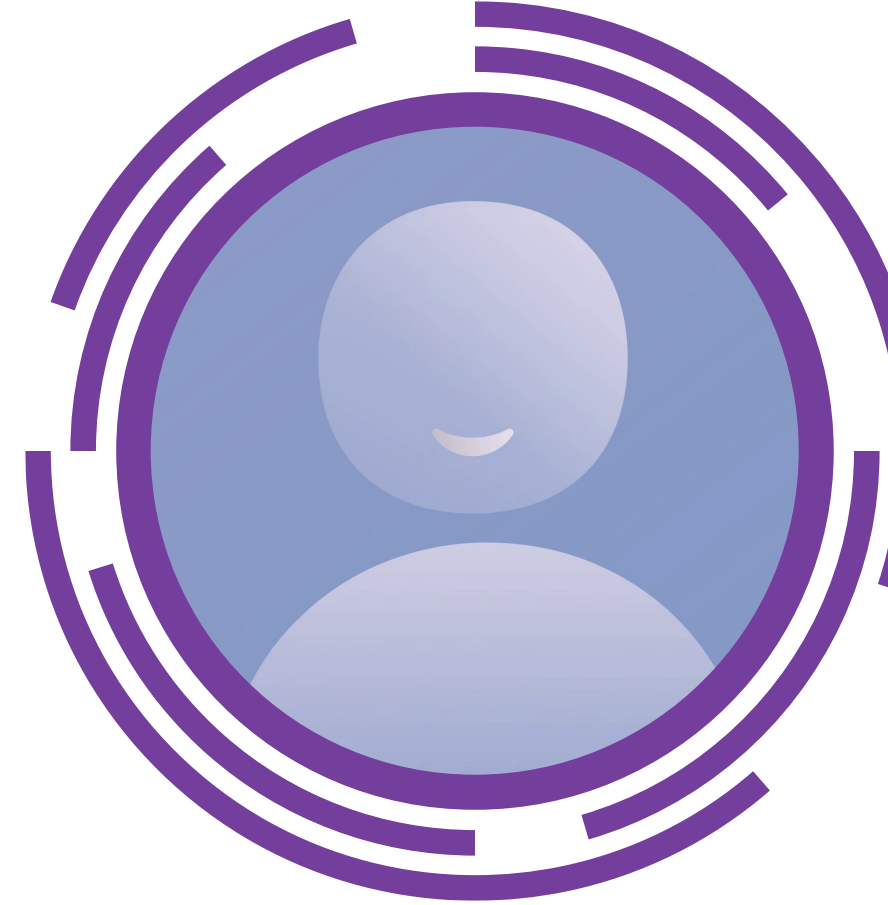
Introduction to the STEMbot project

Our main goals

1. Bridging the gap between theory and practice in STEM education
2. Sparking genuine interest in STEM among students
3. Preparing students for a future filled with science and technology



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Introduction to the STEMbot project

What we created



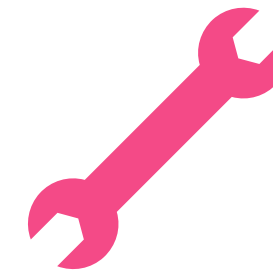
1 introductory guide on the STEM situation in Europe and how to engage students.



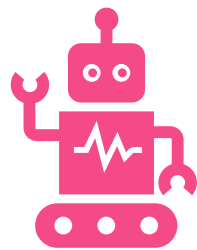
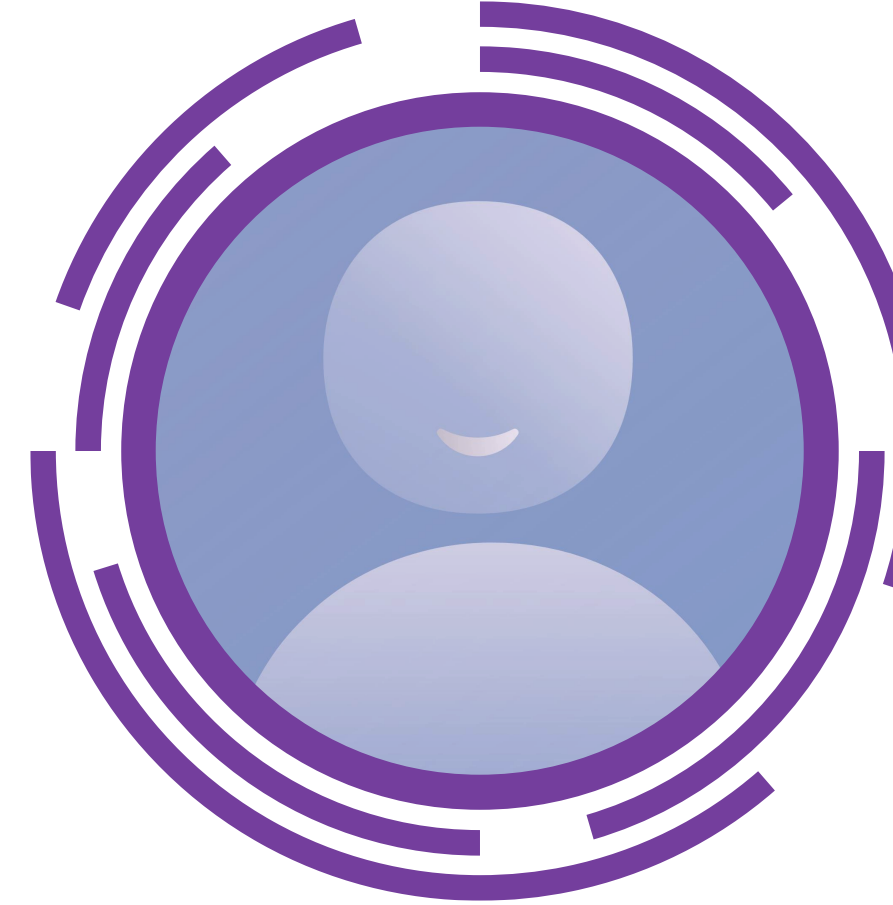
20 video experiments and their **20 associated lessons**, with **questionnaires**.



1 pedagogical guide on how to use STEMbot.



1 guide to creating chatbots with Chatfuel, following the STEMbot approach.



1 Chatbot available on **Facebook Messenger** and **Instagram**, containing the **20 video experiments**, their **lessons** and **quizzes**.



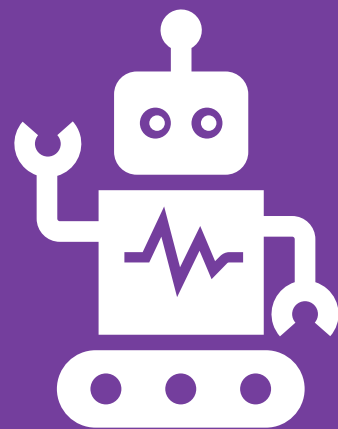
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Importance of **STEM Education**

STEMbot's Mission:
Bringing Math and
Science to Life



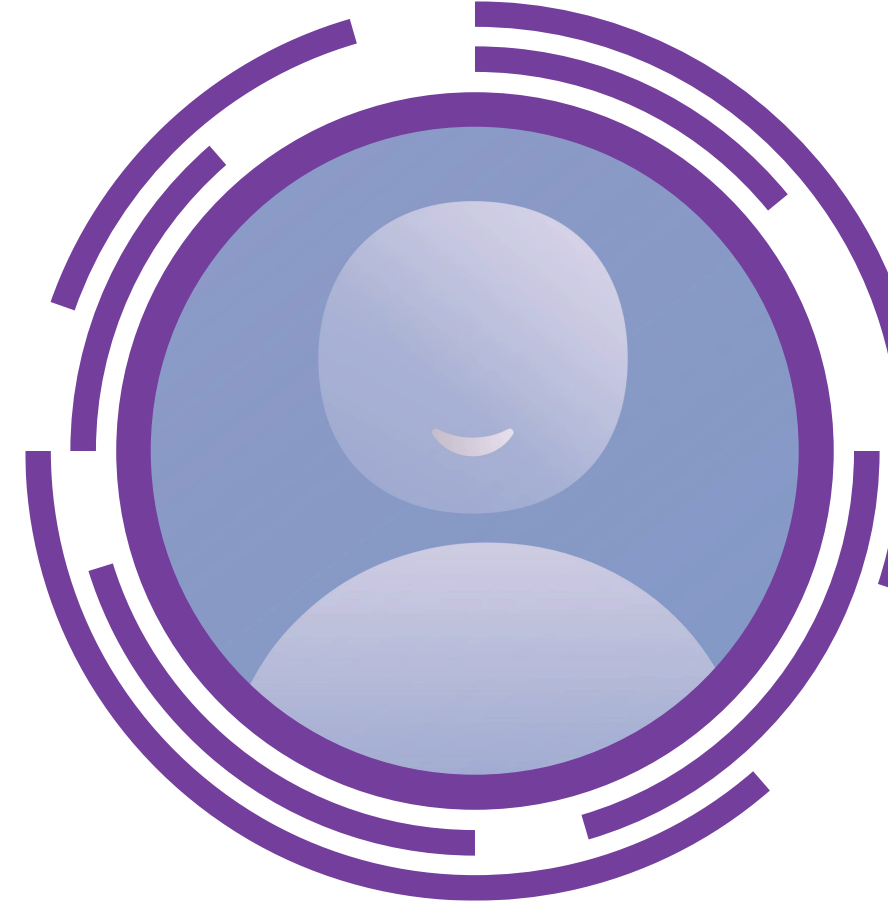
Importance of STEM Education

Why STEM Matters

1. STEM skills are foundational in our tech-driven world; STEM literacy is vital for informed citizenship in the 21st century.
2. STEM careers are the fastest-growing job sectors; STEM drives innovation and economic growth in Europe.
3. STEM education encourages critical thinking and problem-solving skills.
4. STEM skills benefit everyone and answer diverse needs; we need diversity



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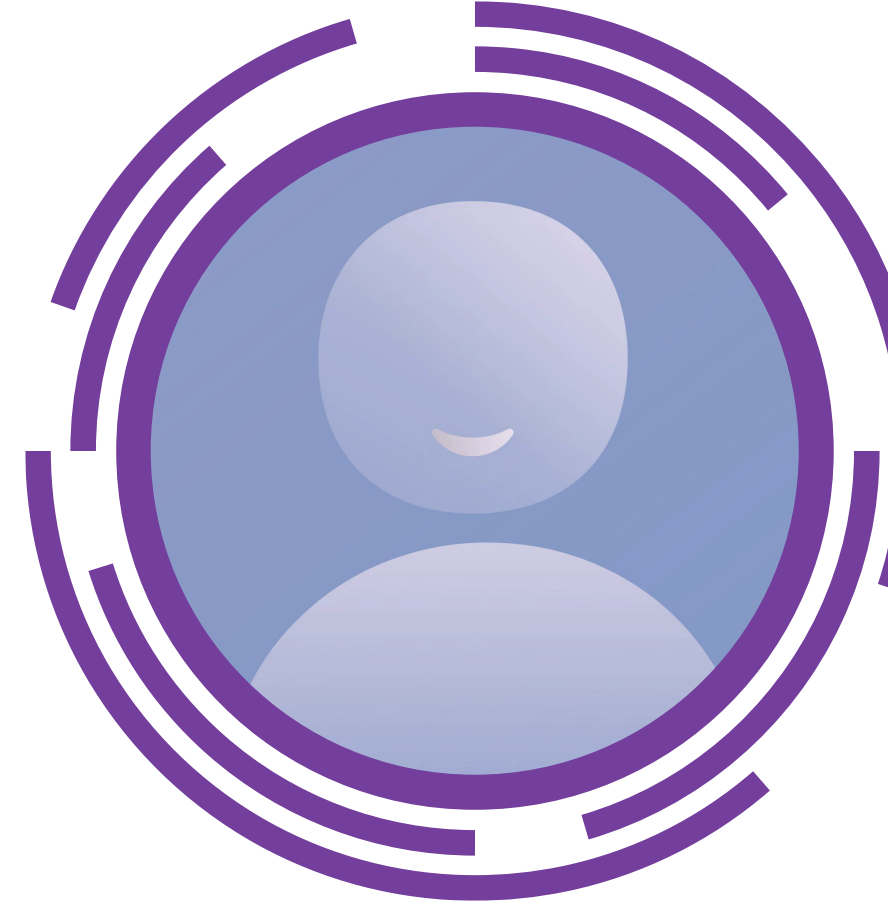
Importance of STEM Education

The Challenge of Engagement

1. Students losing interest in STEM at an early age.
2. The abstract nature of math and science curriculum.
3. The need for practical, hands-on learning experiences.



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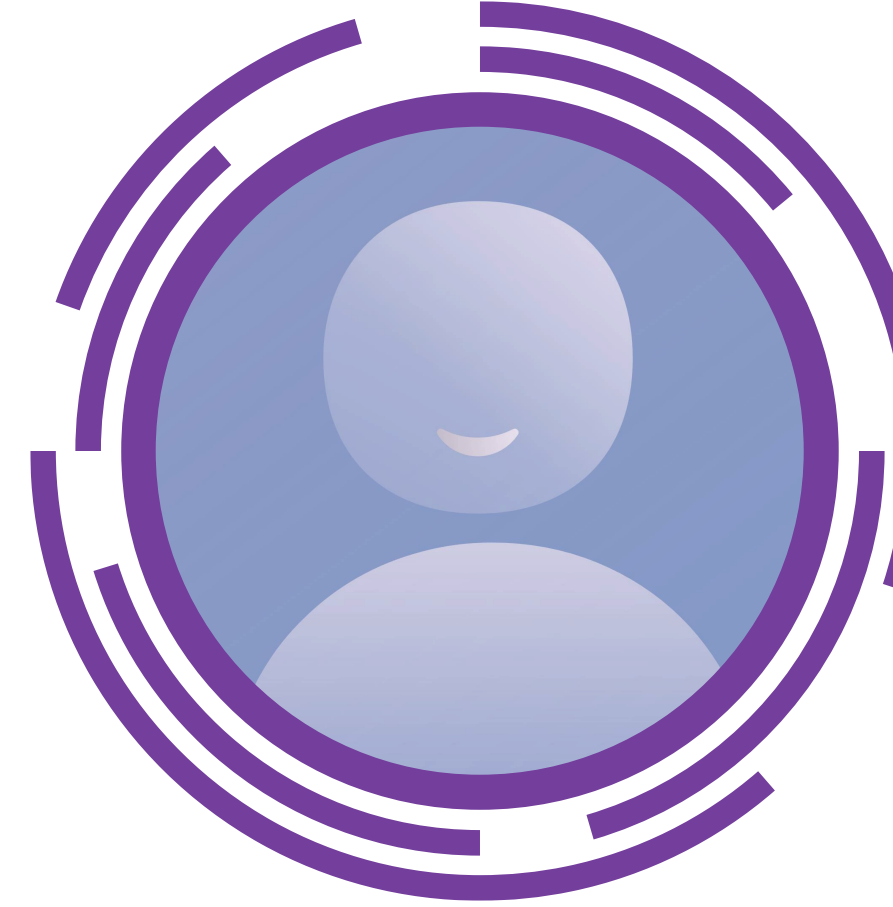
Importance of STEM Education

STEMbot's Mission

1. To make STEM learning more engaging and accessible.
2. Providing a bridge between theoretical concepts and real-world application.
3. Empowering teachers and students with innovative tools.



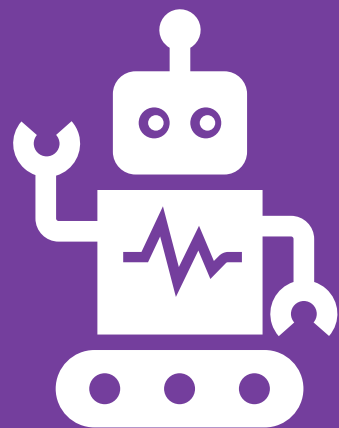
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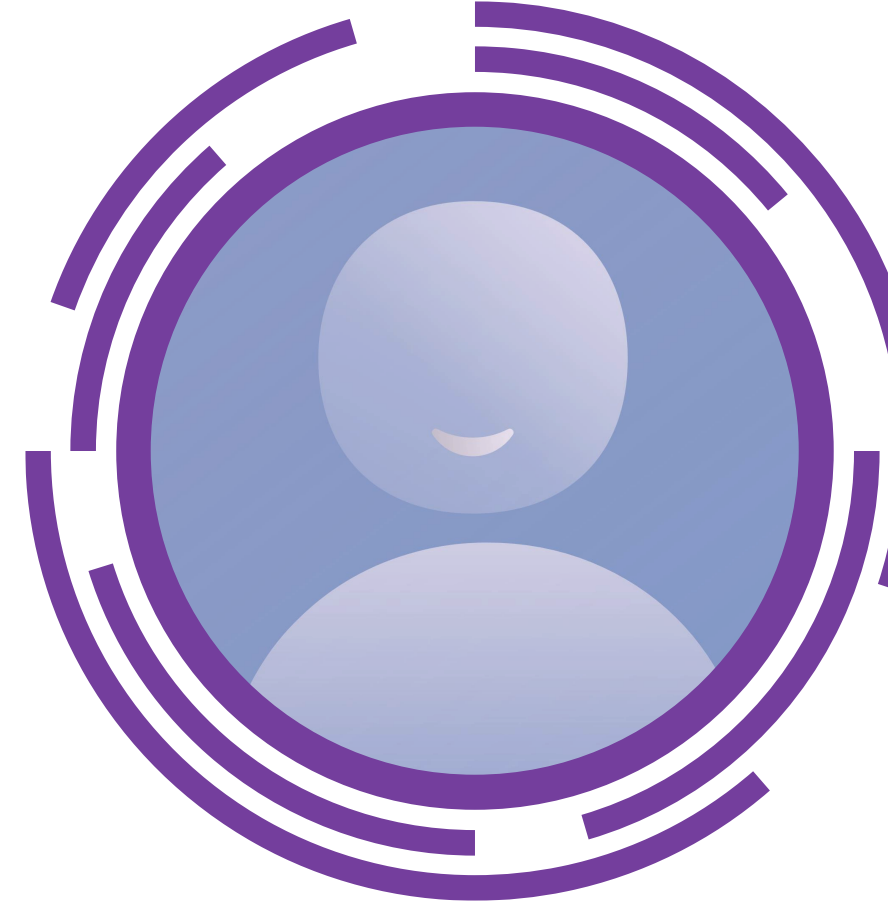
Unveiling **STEMbot Tools**

Introductory guide,
Science Experiment
Video Tutorials,
Lessons

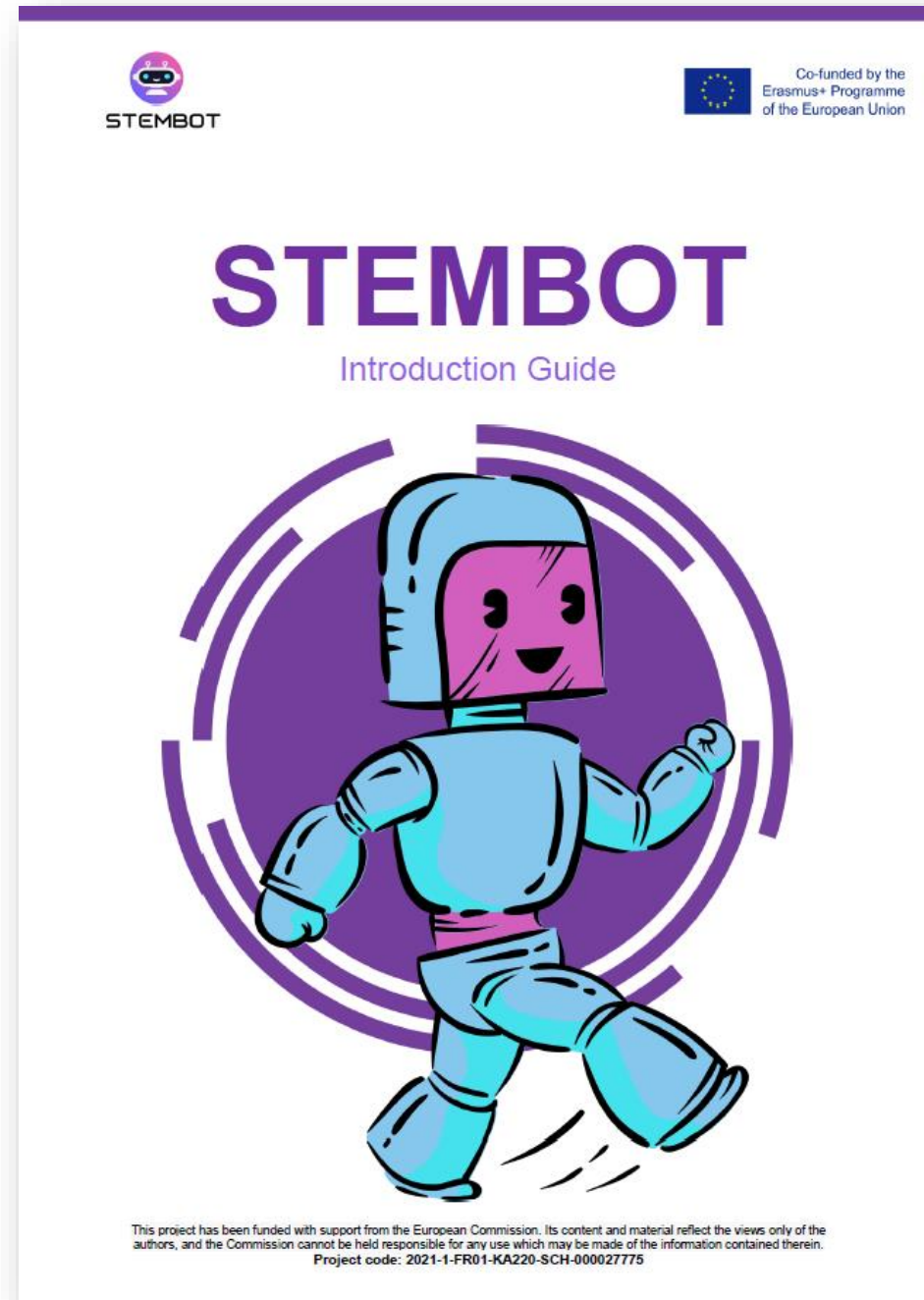


Unveiling STEMbot Tools

The Introductory Guide



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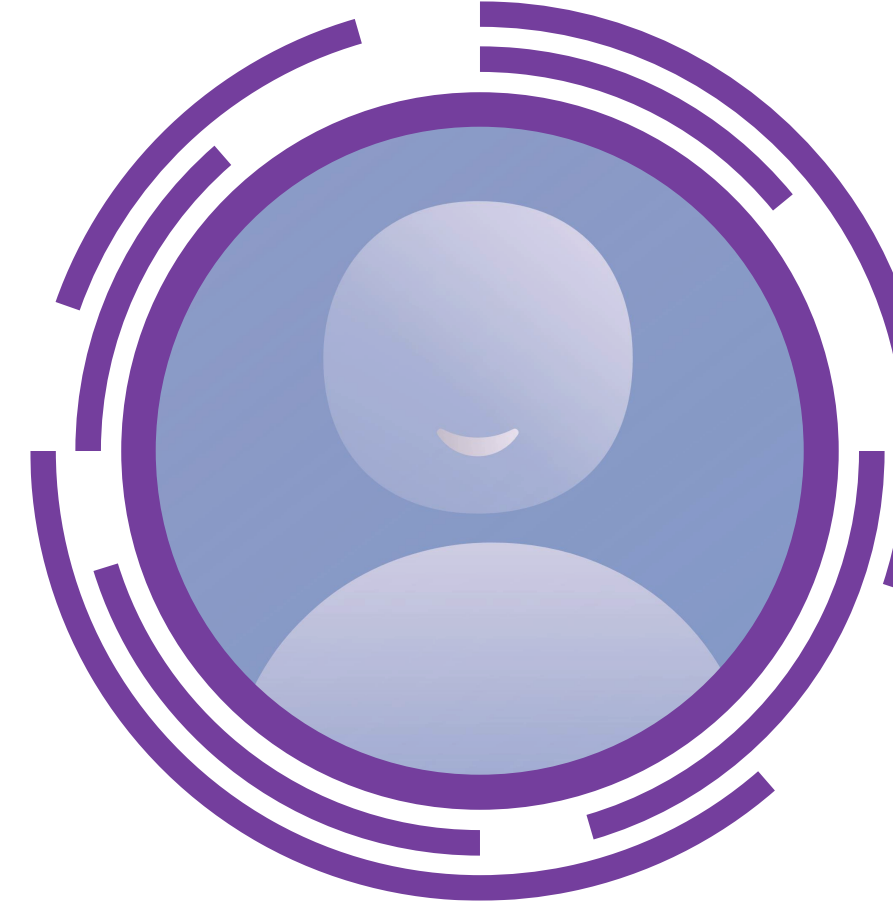
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Introduction Guide



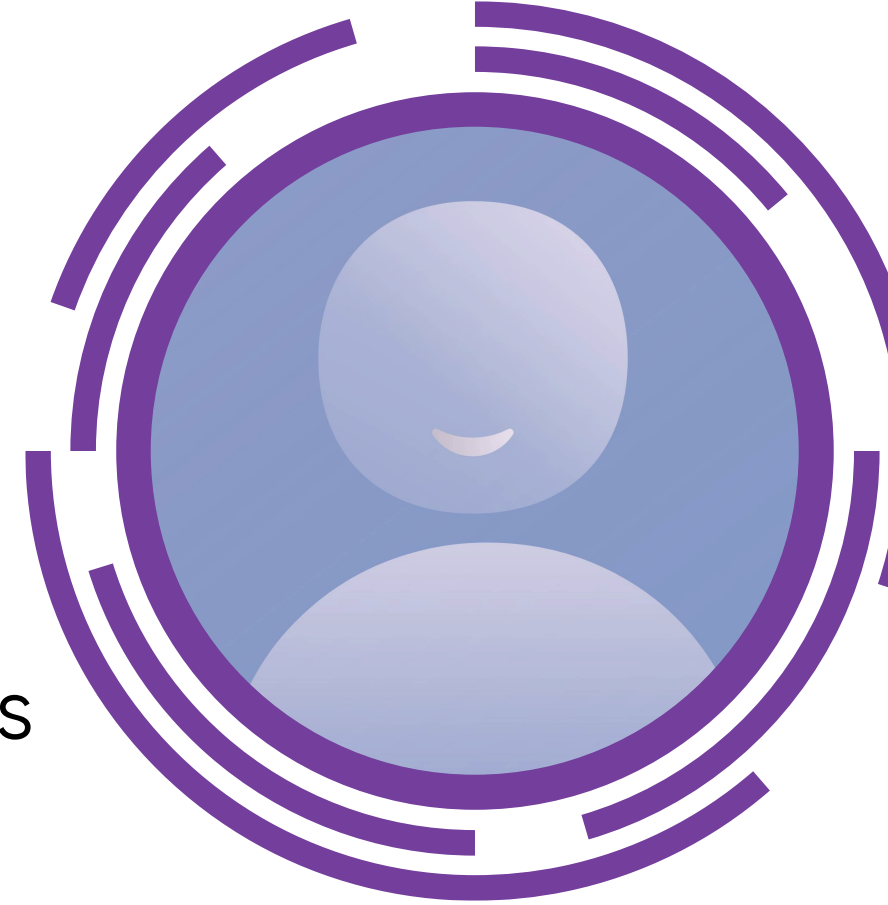
Unveiling STEMbot Tools

The 20 videos and lessons

1. Overview of the 20 Science Experiment Video Tutorials: experiments that can easily be reproduced
2. Integration of **lessons** with video tutorials
3. Objectives of using video tutorials and lessons in STEM education



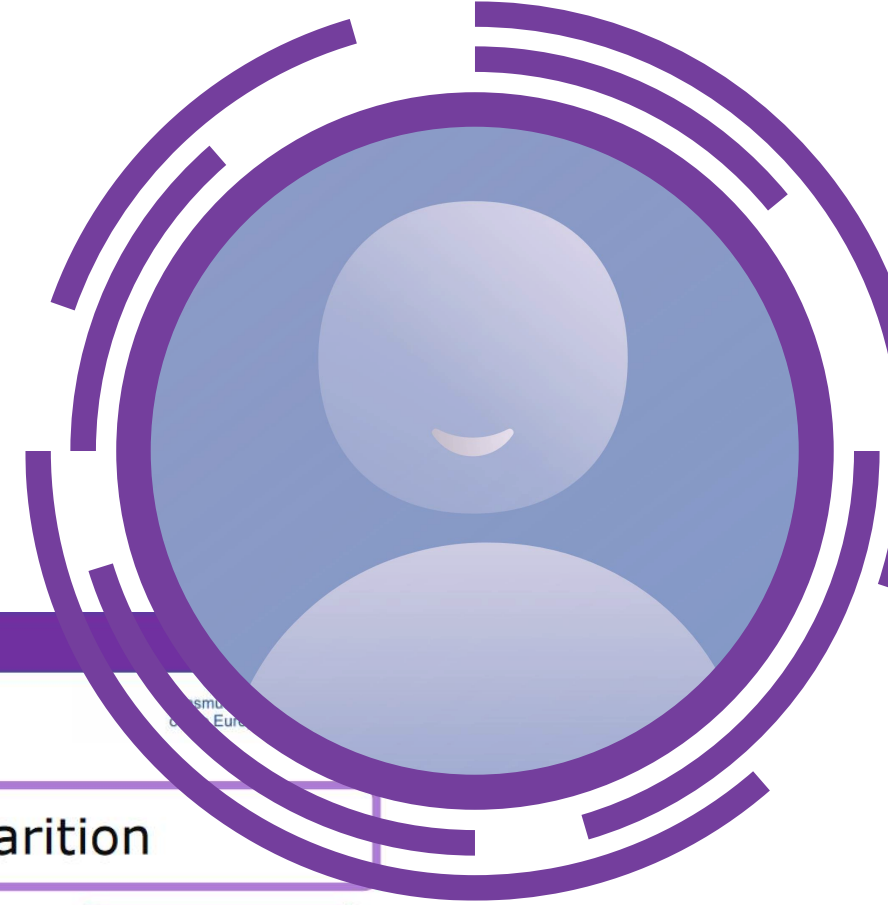
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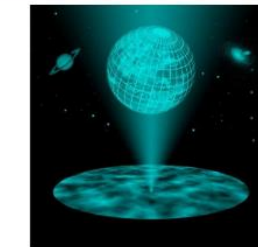
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Unveiling STEMbot Tools

The 20 videos and lessons, spotlight on "Apparition"



Apparition



Key words

- Physics
- Light
- Reflection
- Hologram

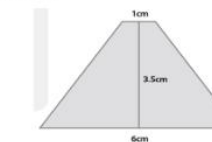
The science behind

Introduction

In the video tutorial, you will learn to create your own hologram using light reflection and your smartphone.

First, you will create a template made of 4 identical trapezes of 6cm by 3.5cm by 1cm each. (See below)

Then, duplicate the template onto clear plastic, and cut each element. Taping them together with clear tape, you will get a 3D shape with a small hole at the bottom and a big opening. Place your creation in the middle of your phone and press Play! The light reflecting from the phone will go through the clear plastic pieces, which act as mirrors and reflect the image on each side, creating a 3D Hologram.



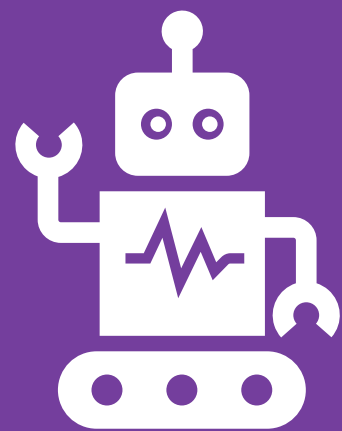
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Introduction and Demonstration of **STEMbot**

Your Chat Companion
in STEM



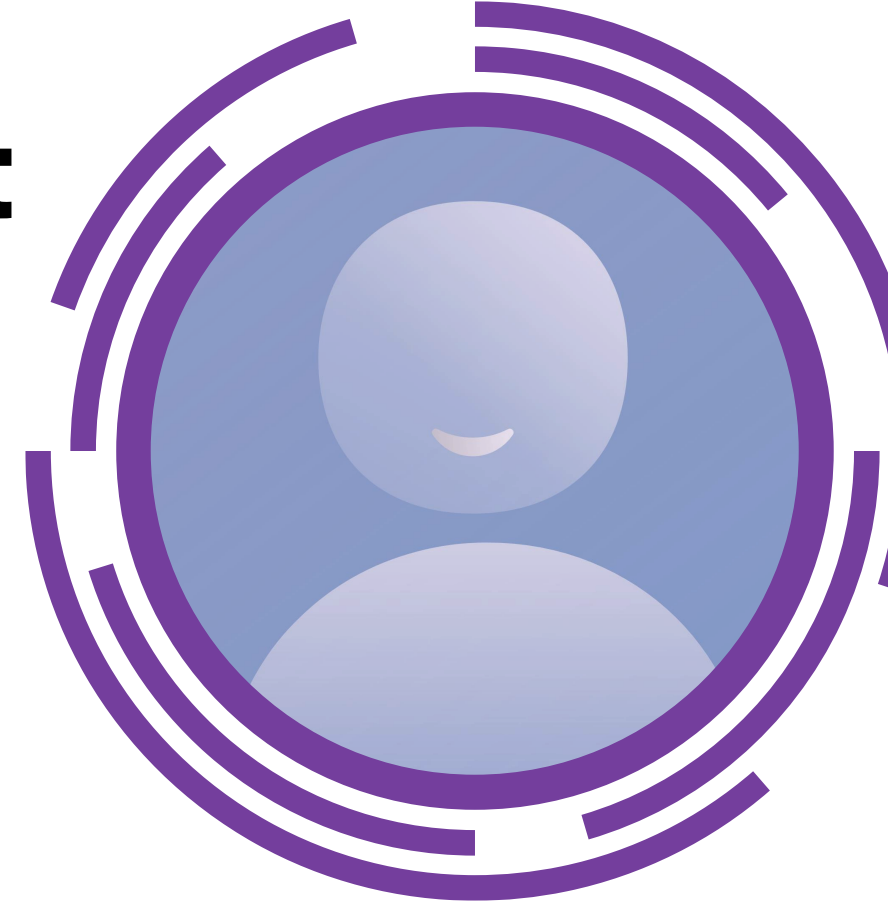
Introduction and Demonstration of STEMbot

Understanding the STEMbot Chat Companion

1. The goals of using STEMbot in STEM education: engagement, interactivity, practical experiences
2. Scripted vs. Generative Chatbots.
3. The advantage of scripted, sequential chatbots in educational settings: more control over the educational content
4. The bot guides the user to the 20 video experiments, their associated lesson and final quiz



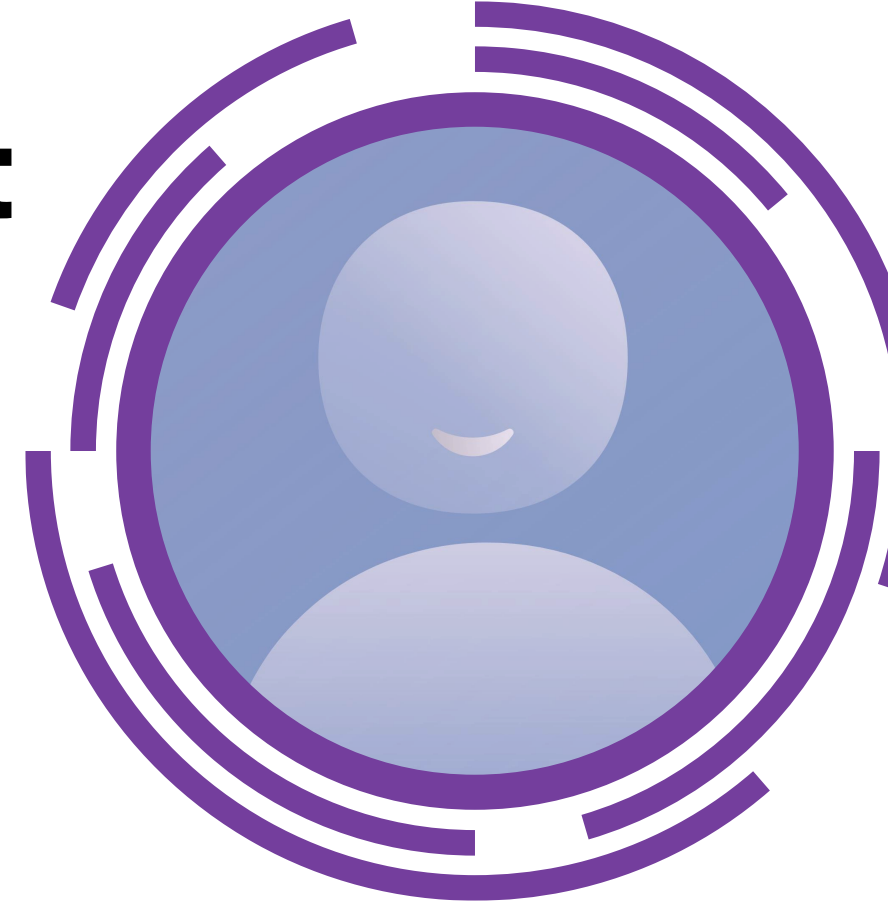
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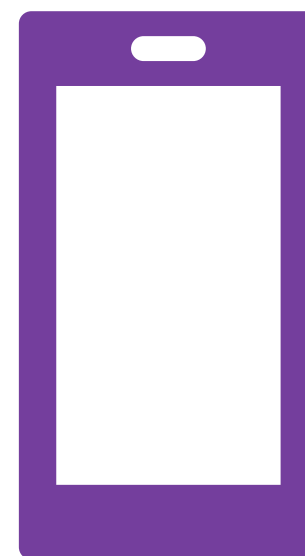
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Introduction and Demonstration of STEMbot

On what platforms?



On Desktop



On Mobile



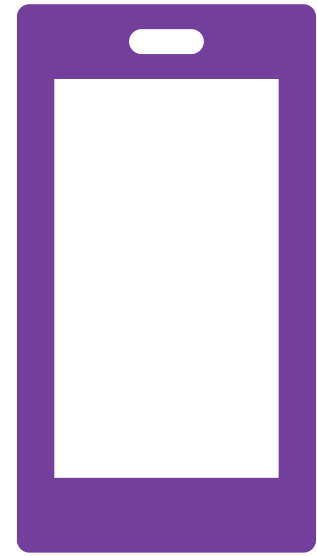
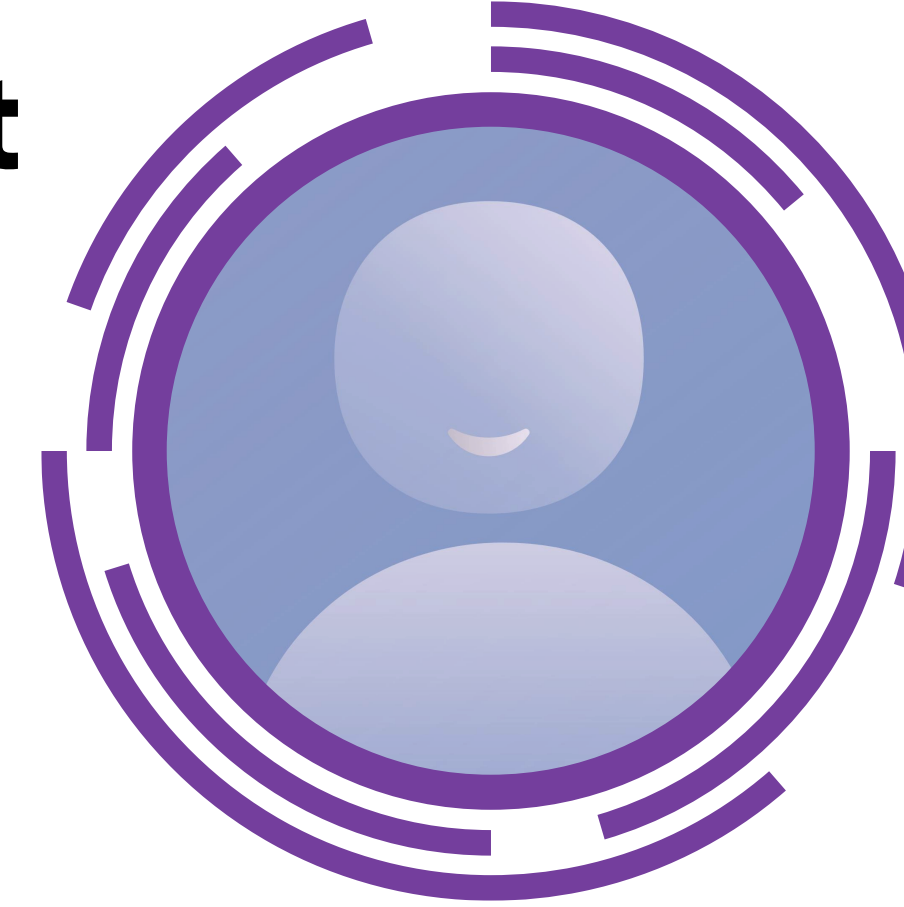
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Introduction and Demonstration of STEMbot

Example: starting a conversation on Instagram



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← stembot_project

 **14** Posts **55** Followers **0** Following

STEMbot
Science & Tech
Hi, I'm STEMbot, a pedagogical chatbot 🤖 that will make you explore incredible STEM experiments. Talk to me 😊
www.stembot.eu and 2 more

Following ▾ Message +

Grid of images showing STEMbot activities:

- STEMBOT MULTINATIONAL CONFERENCES
- STEMBOT ONLINE K&S
- STEMBOT Learning by doing...
- www.stembot.eu

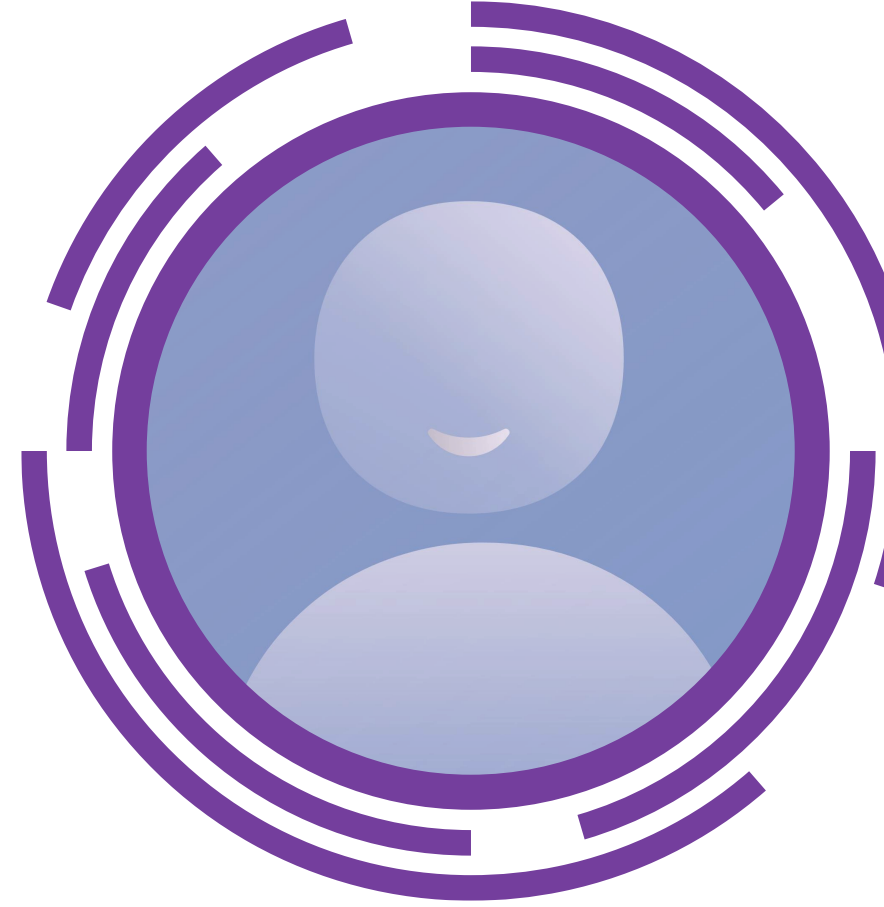
Navigation icons: Home, Search, Post, Video, Profile



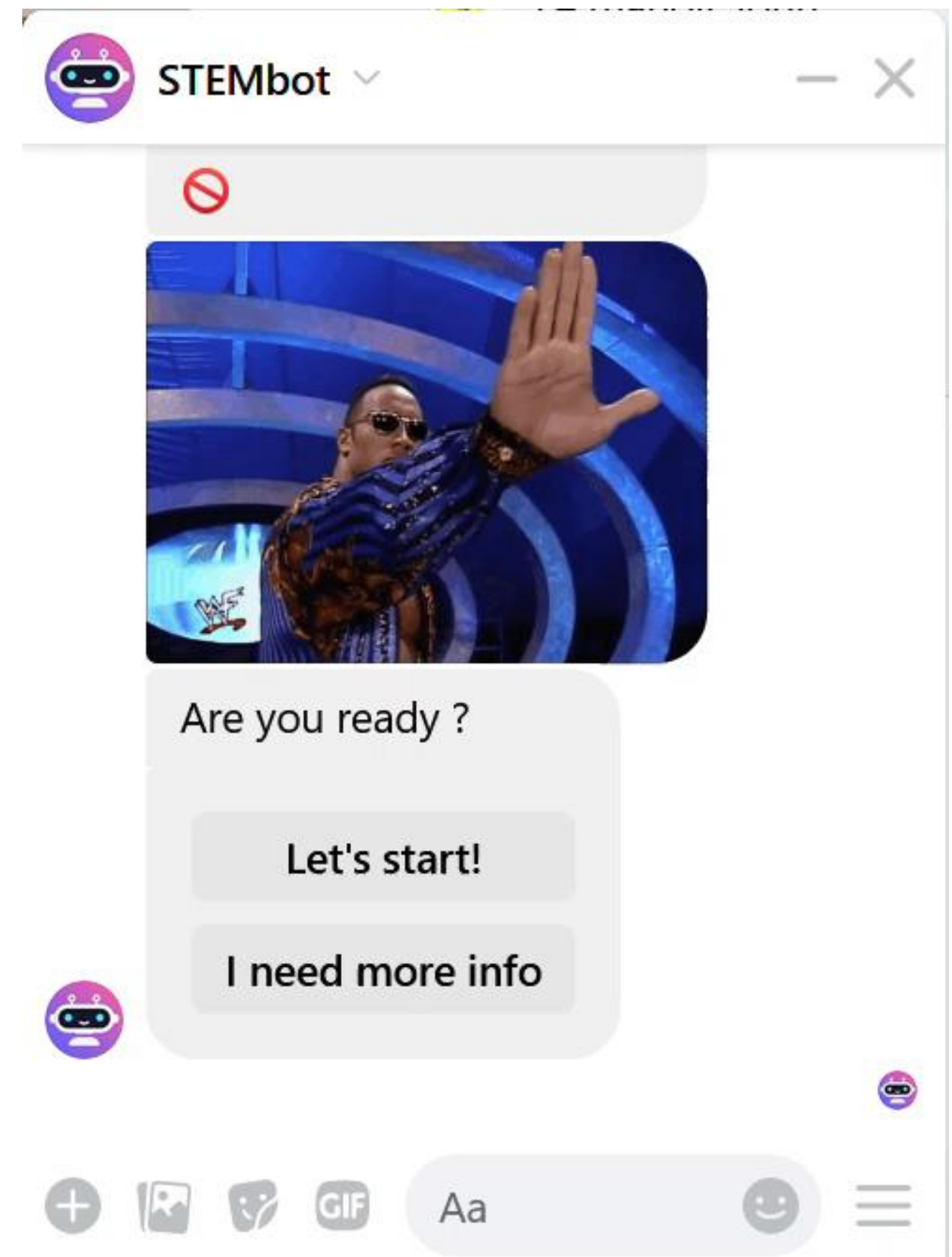
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Introduction and Demonstration of STEMbot

How to navigate STEMbot 1) Follow the Follow the Flows



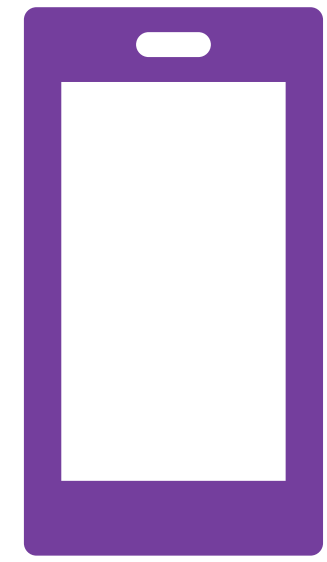
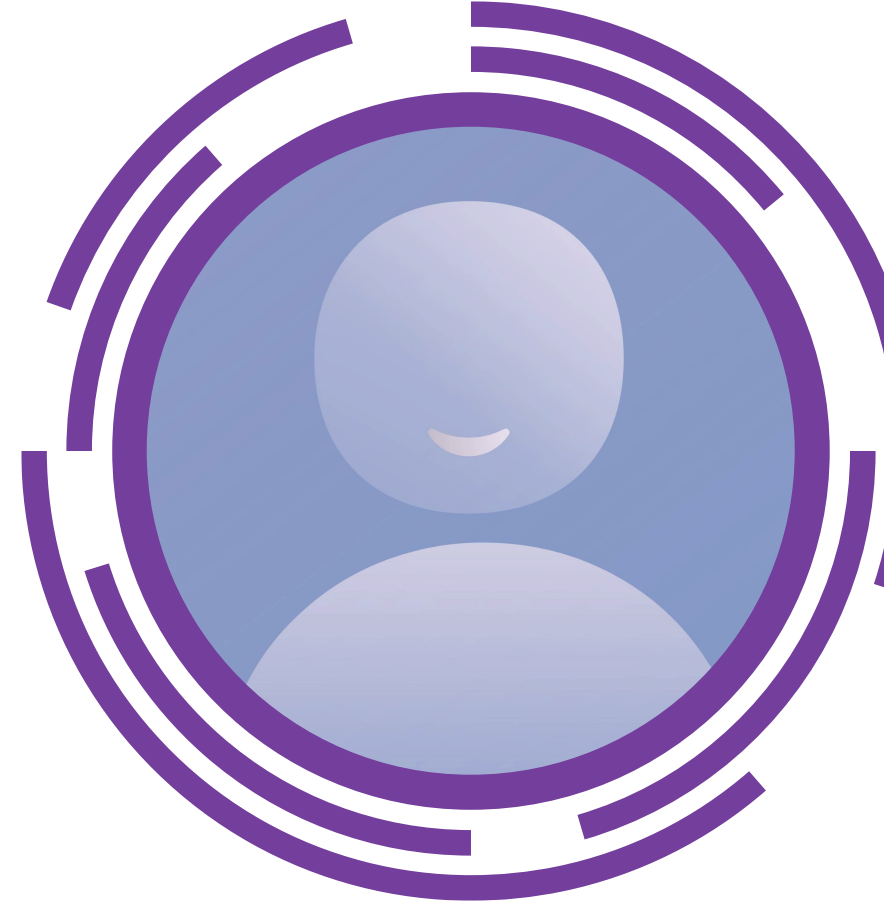
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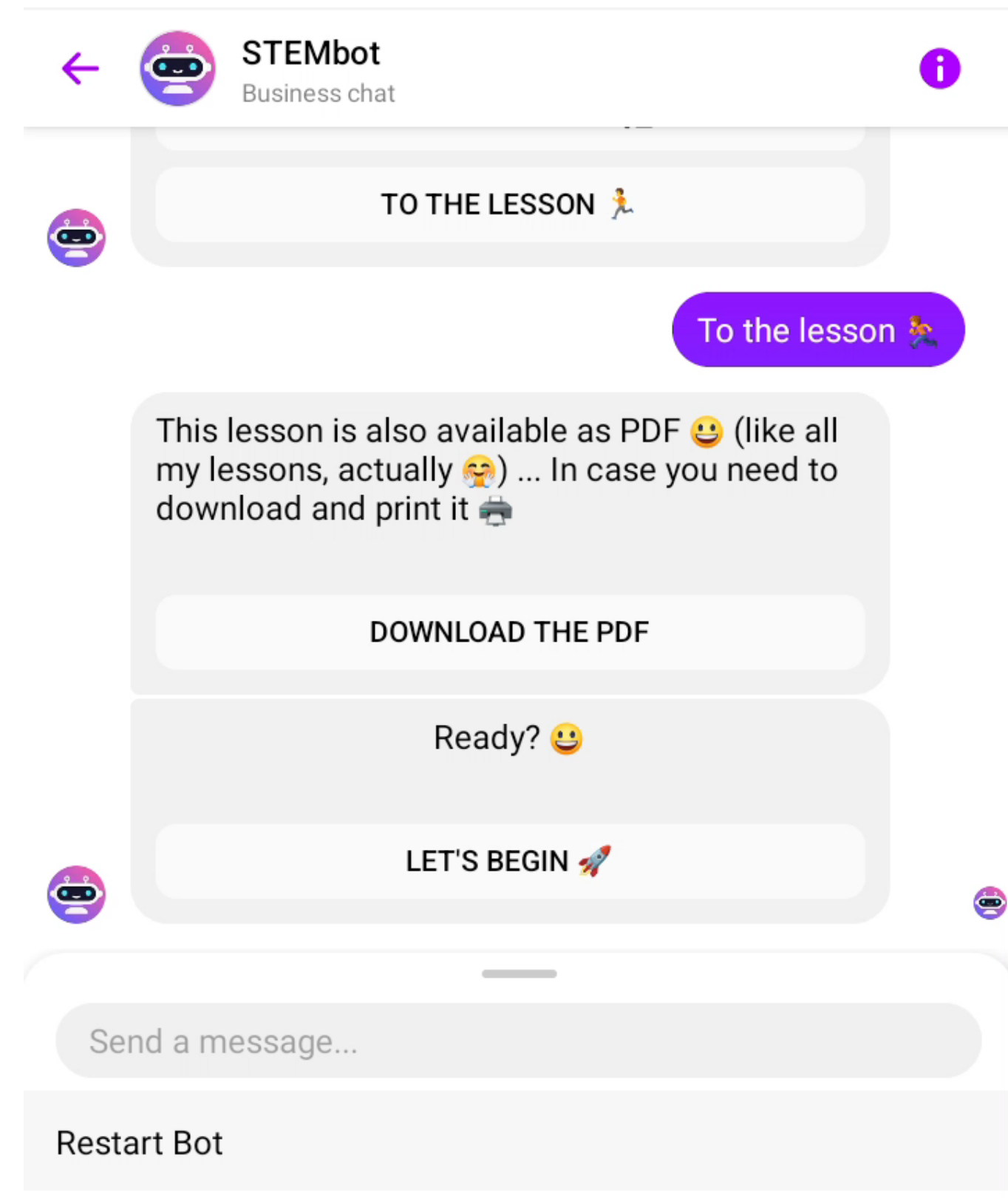
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Introduction and Demonstration of STEMbot

How to navigate STEMbot 2) Type keywords



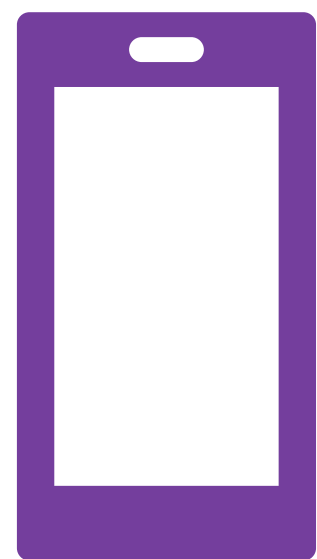
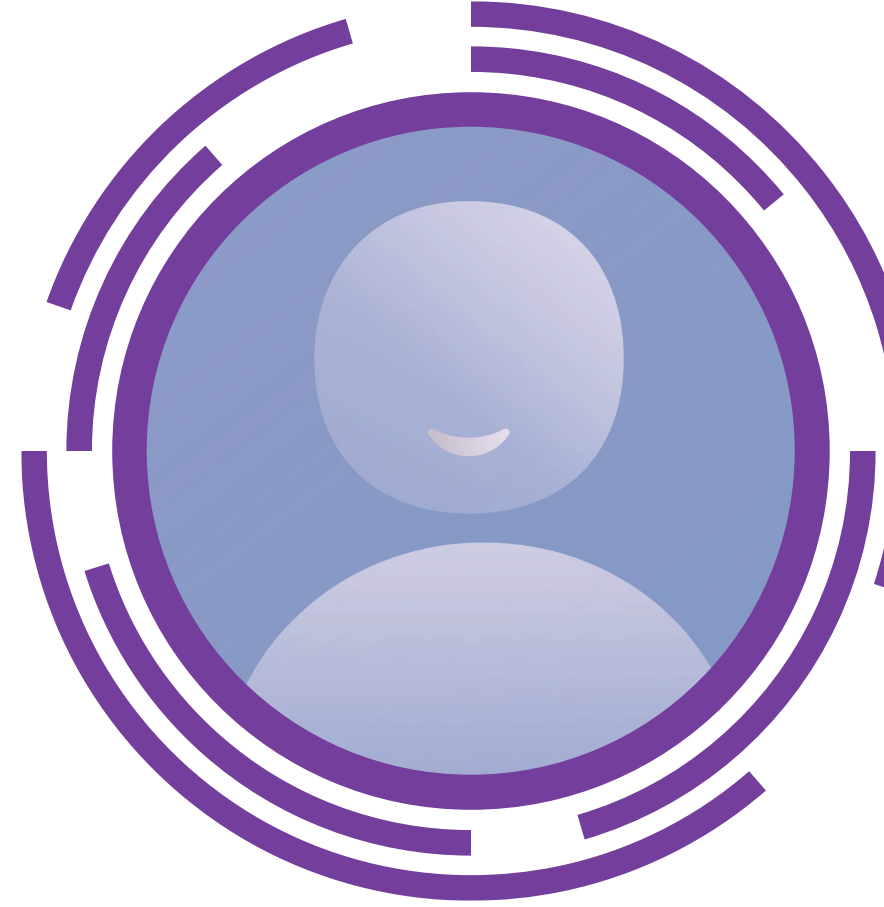
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Introduction and Demonstration of STEMbot

How to navigate STEMbot 3) Using the Menu



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← **STEMbot** Business chat • stembot_project 📞 📷 ☰

way of learning and teaching, suitable for today's world and to help avoid the drop of interest for STEM subjects among secondary school students.

But if you want to discuss with me on a computer, you can 😊 I'm available on Facebook Messenger too (the app AND the web version 😊). Visit my website to learn more: <https://www.stembot.eu>

If you are on the Instagram app 📱, you should see a button below 👁️. Click on it, and we'll start!

Let's learn!!! 🏃

🤖 I am a chatbot, so you will often need to use buttons to answer me.

🤖 Do you understand how to do that?

Yes No

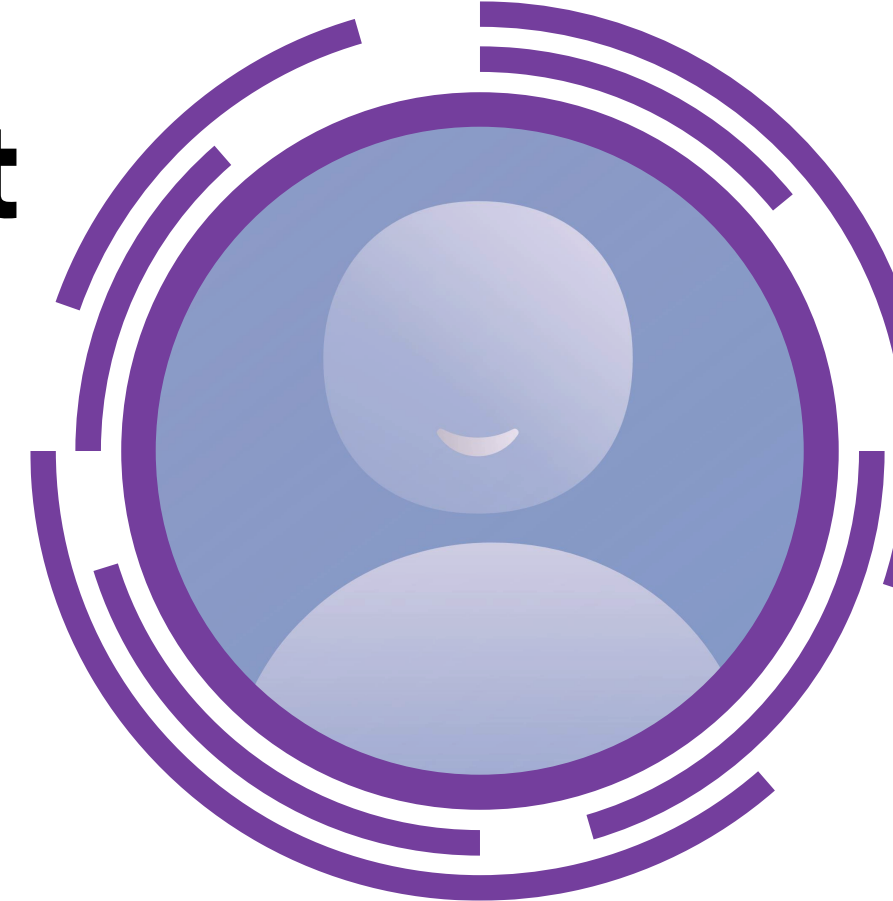
📷 | Message... 🎤 🖼️ 🗨️



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Introduction and Demonstration of STEMbot

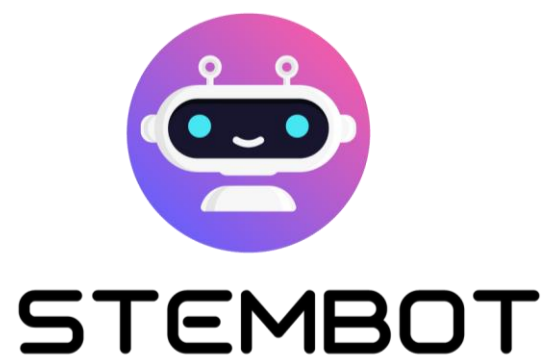
Have a look by yourself



<https://www.facebook.com/people/STEMBot/100081742100067/>



https://www.instagram.com/stembot_project/



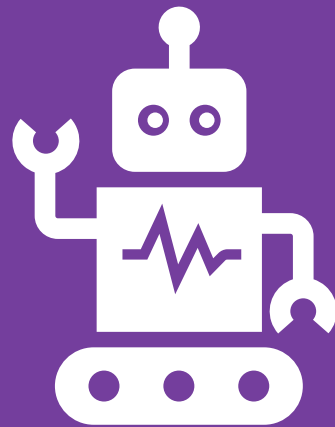
You will also find the links at <https://www.stembot.eu>
or by searching "STEMbot in Facebook or Messenger



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Insights from literature and recommendations

Creation guide: Empowering
Educators to Develop Their
Own Chatbots for STEM
Learning



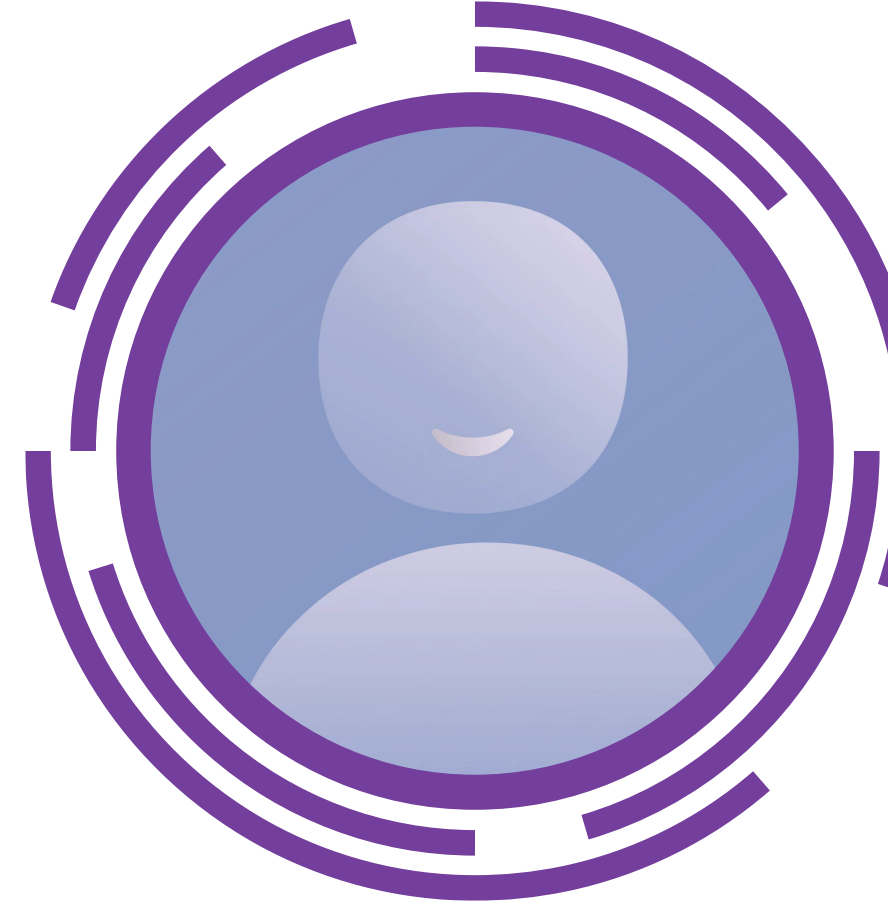
Creation guide: Empowering Educators

What does the literature have to say?

1. Free training of digital skills increases creativity and understanding among teachers (Dewi, 2022).
2. There is a fear that creating digital content requires advanced technical skills (Wulf, 2005)
3. Project-based training offers promising perspectives to enhance the skills of future teachers (Zenkina, 2022).
4. the integration of chatbots into teaching assistant training courses has been shown to be a valuable resource (Gonda, 2019).



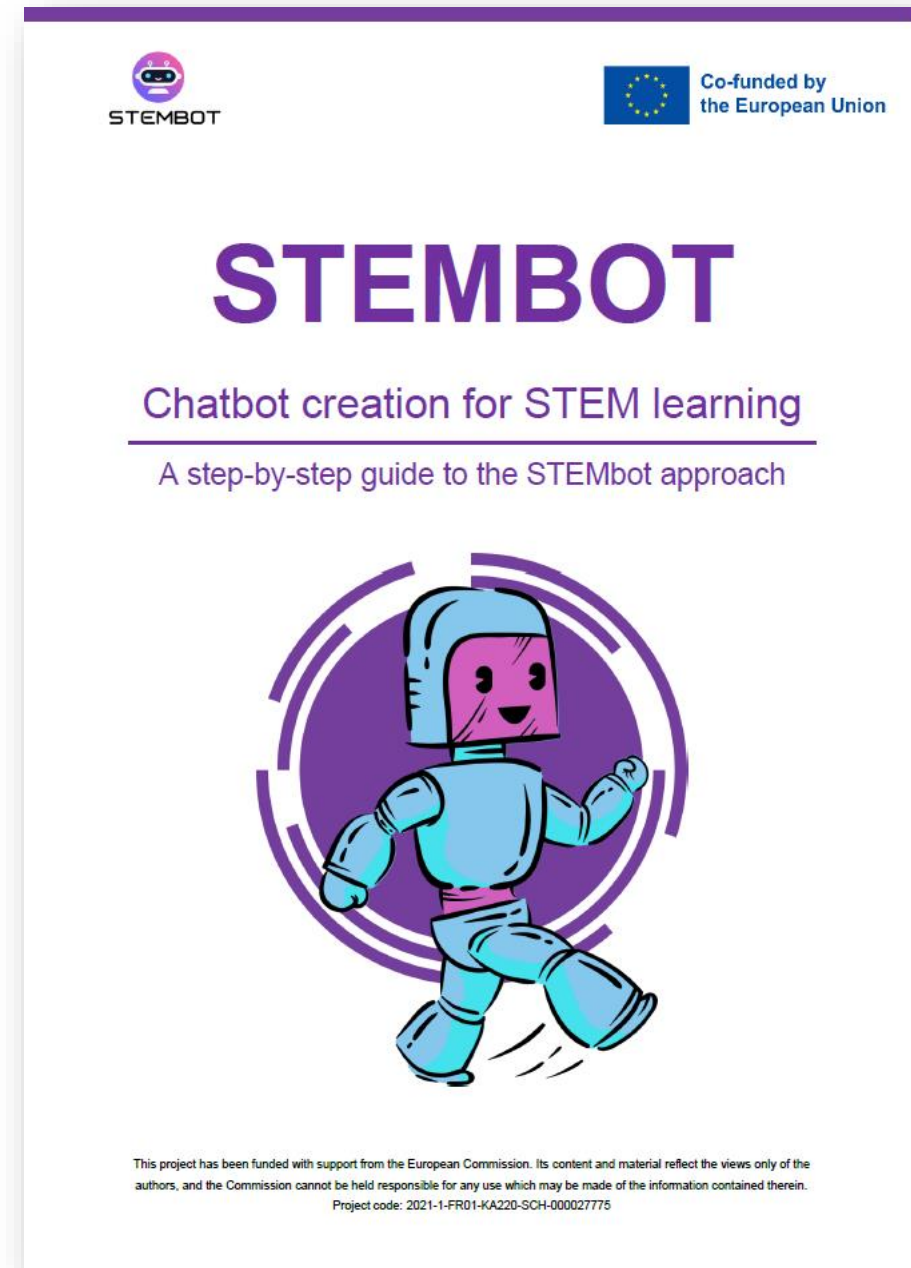
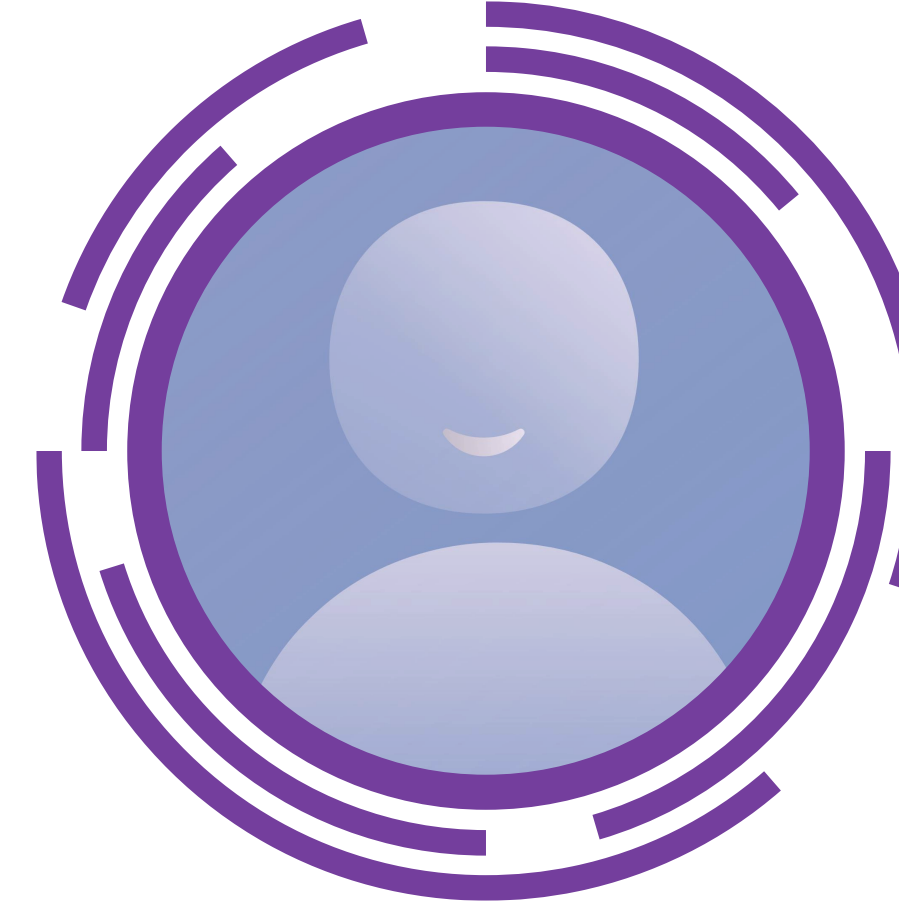
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Creation guide: Empowering Educators

Our answer: The creation guide



Giving all the keys for teachers to reproduce their own "STEMbot project".



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Creation guide: Empowering Educators

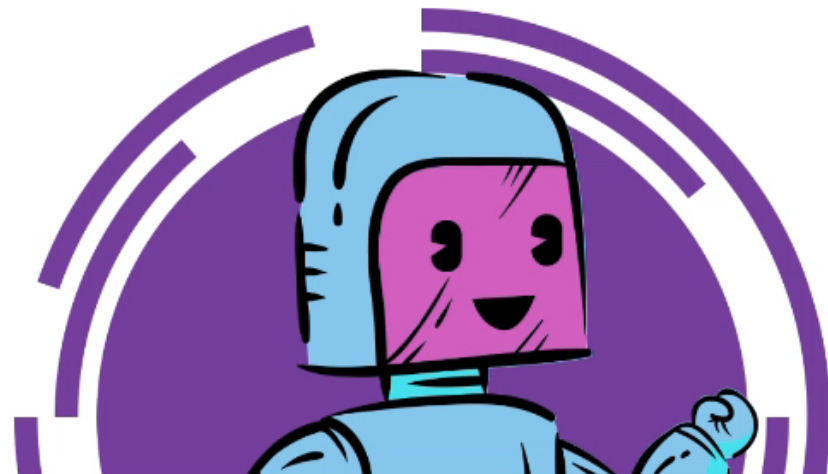
What is in the creation book



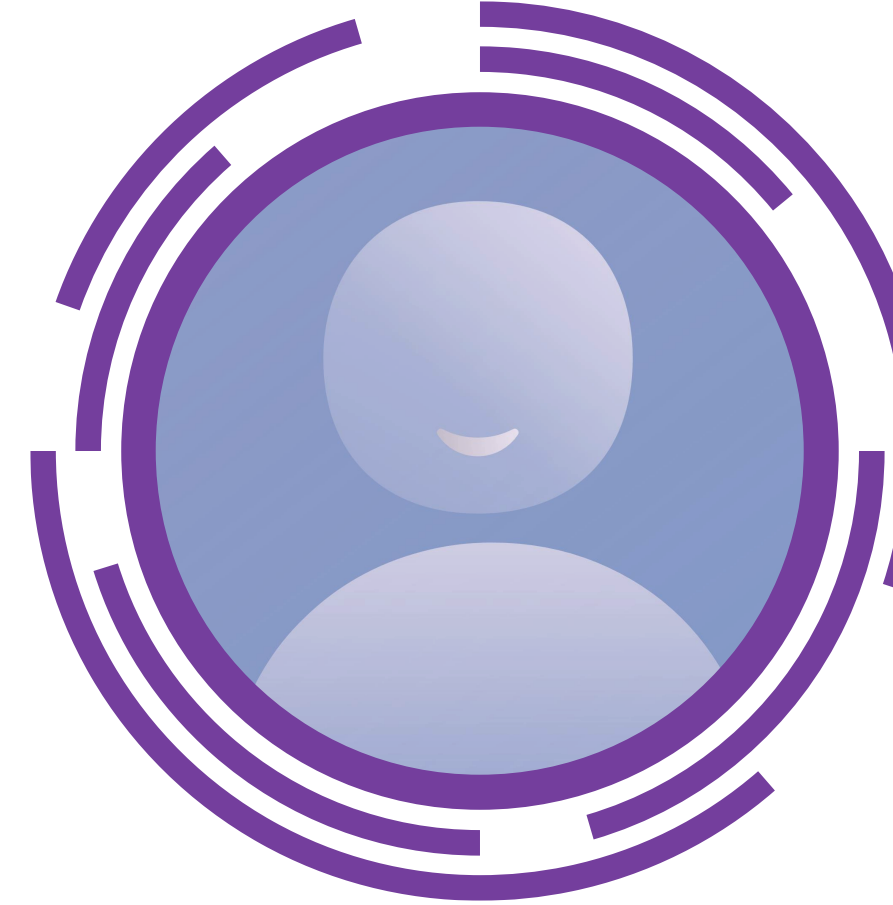
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Chatbot creation for STEM learning

A step-by-step guide to the STEMbot approach



1. Introduction
2. Chapter 1: How to design a step-by-step experiment
3. Chapter 2: How to create a video of your experiment
4. Chapter 3: How to create your chatbot with Chatfuel
5. Conclusion



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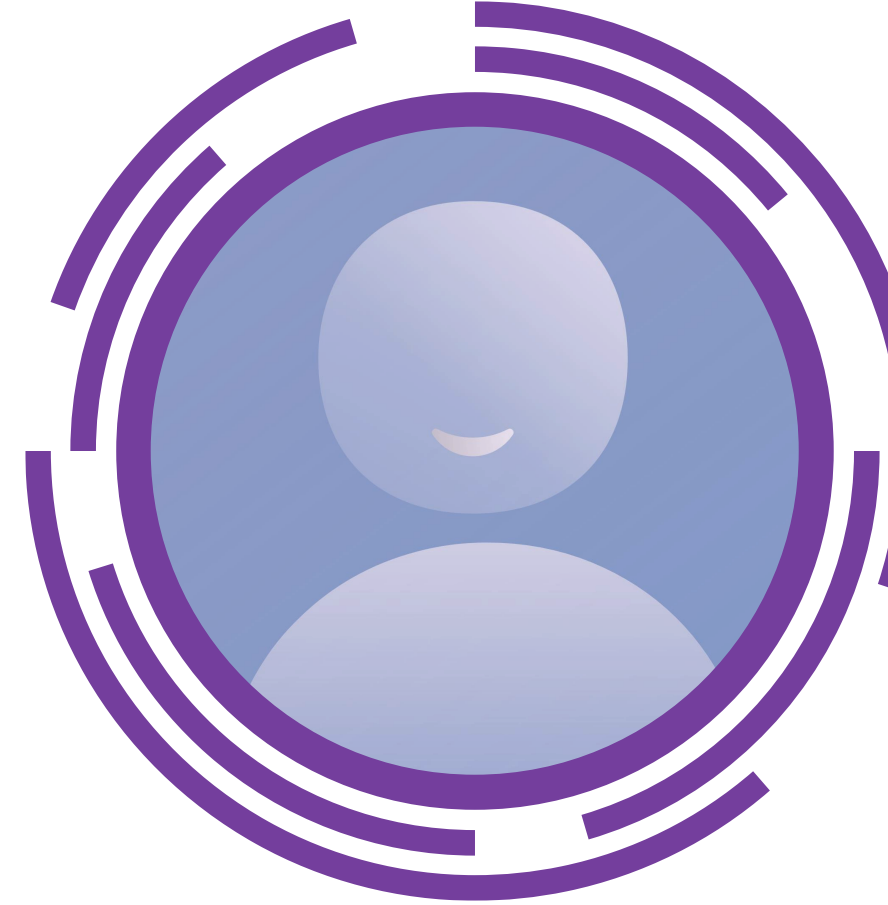
Creation guide: Empowering Educators

What is in the creation book

1. Chapter 3 also comes with a few step-by-step videos.
2. If that's not enough, Chatfuel's documentation is pretty clear and complete.



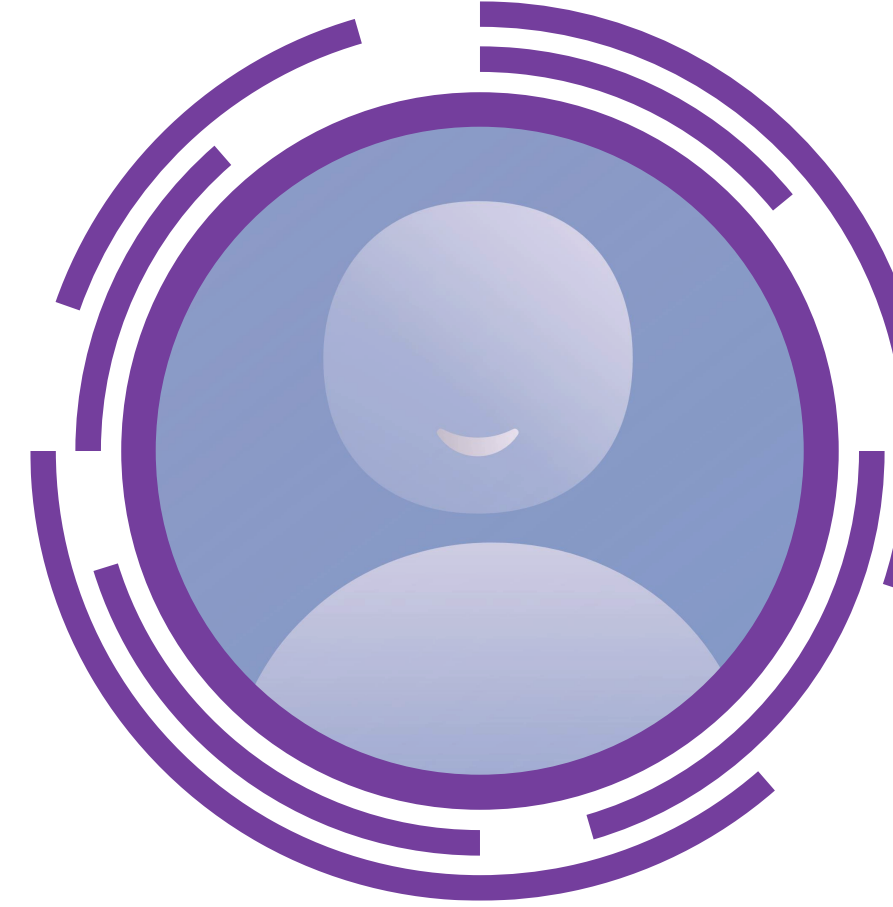
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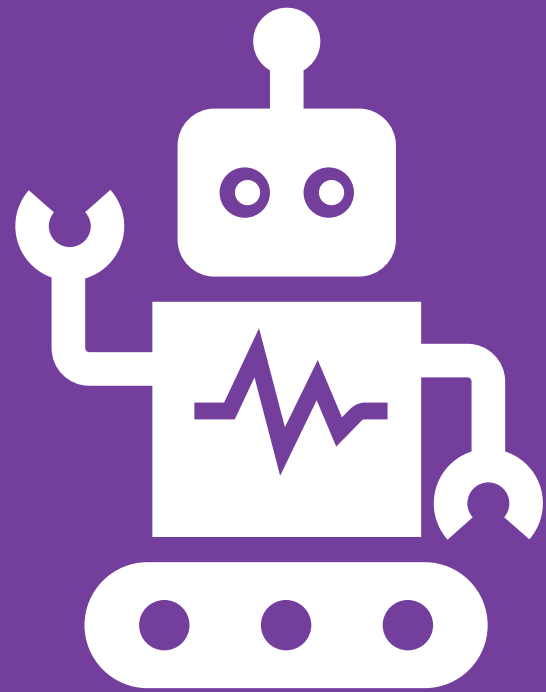
Creation guide: Empowering Educators

What is in the creation book

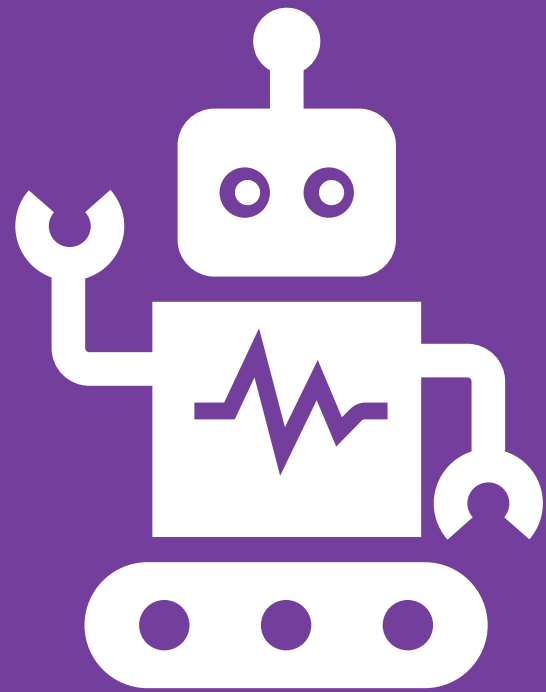


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Conclusion



Q&A and discussion





THANK YOU

All project results are available at
<https://stembot.eu>



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Project code: 2021-1-FR01-KA220-SCH-000027775