CHALLENGES AND OPPORTUNITIES IN STEAM DIDACTICS: FROM THEORY TO EVERYDAY LESSONS

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EDU GAME

STEAM VDU
didaktikos centras

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STEAM (angl. Science, Technology, Engineering, Arts, Mathematics). The concept is defined as the **complex and holistic understanding** of real-world phenomena through a **creative approach** and the organisation of **integrated science**, technology, engineering and mathematics **education**.

STEAM IMPORTANCE IN EDUCATION

STIMULATES CRITICAL THINKING AND PROBLEM SOLVING SKILLS

encourages students to adopt an interdisciplinary approach

PREPARES STUDENTS FOR THE PROFESSIONS OF THE FUTURE

The professions of the future require not only technical knowledge, but also the ability to solve problems creatively and work in teams. Fosters innovation and creativity

IMPROVES LEARNING MOTIVATION AND ENGAGEMENT

the opportunity to learn through hands-on experience and to solve real problems

SUPPORTS SCHOOL INNOVATION

By implementing STEAM programmes, the school demonstrates its commitment to innovation and improving the quality of education

WHY STEAM ?

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WHAT MAKES STEAM A SUCCESS AT SCHOOL

STEAM DIDACTICS

Objectives:

- Developing interdisciplinary skills;
- Using creative and innovative teaching methods;
- STEAM framework in the classroom: theory + practice + reflection
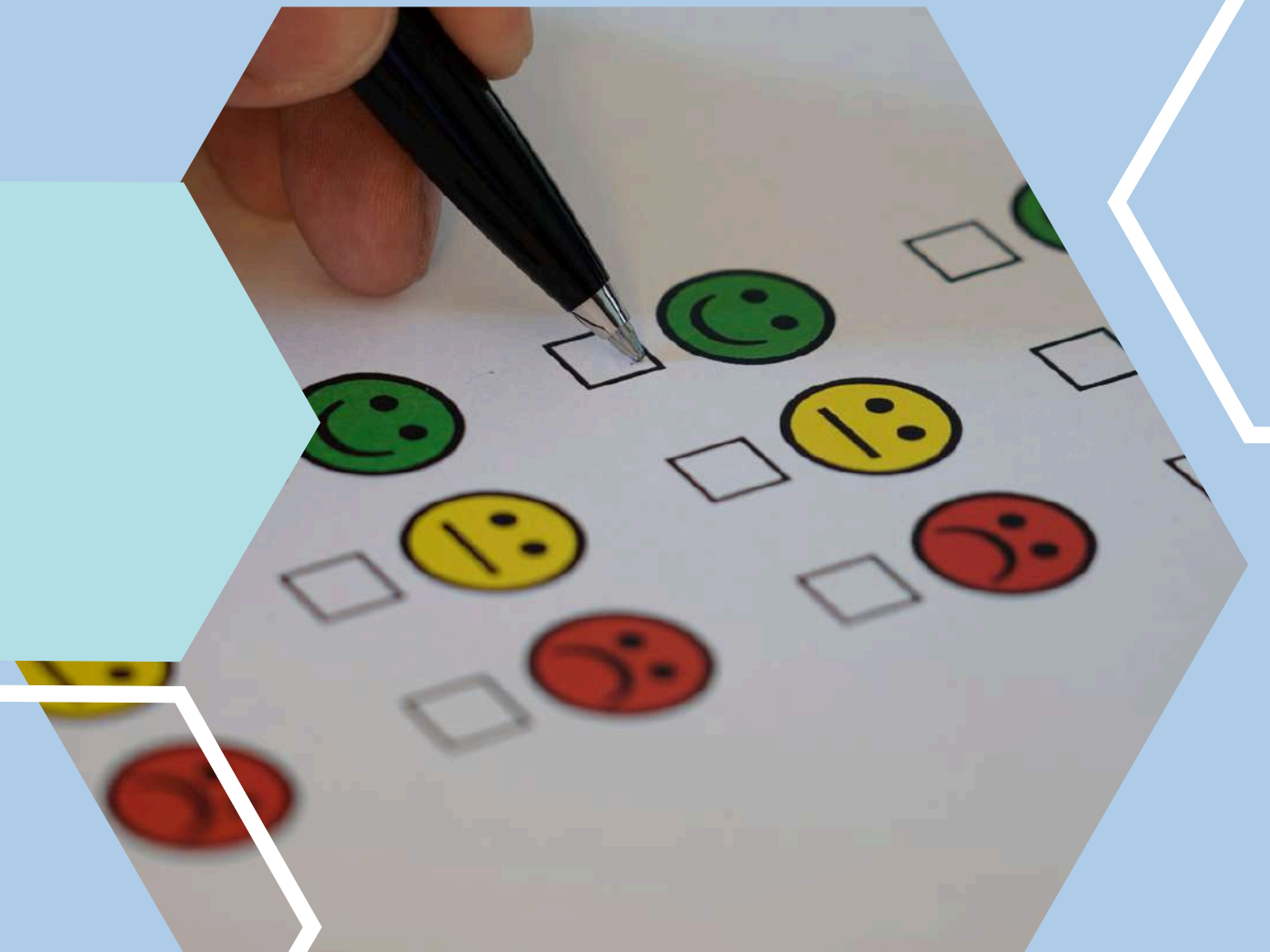- Examples of successful STEAM projects
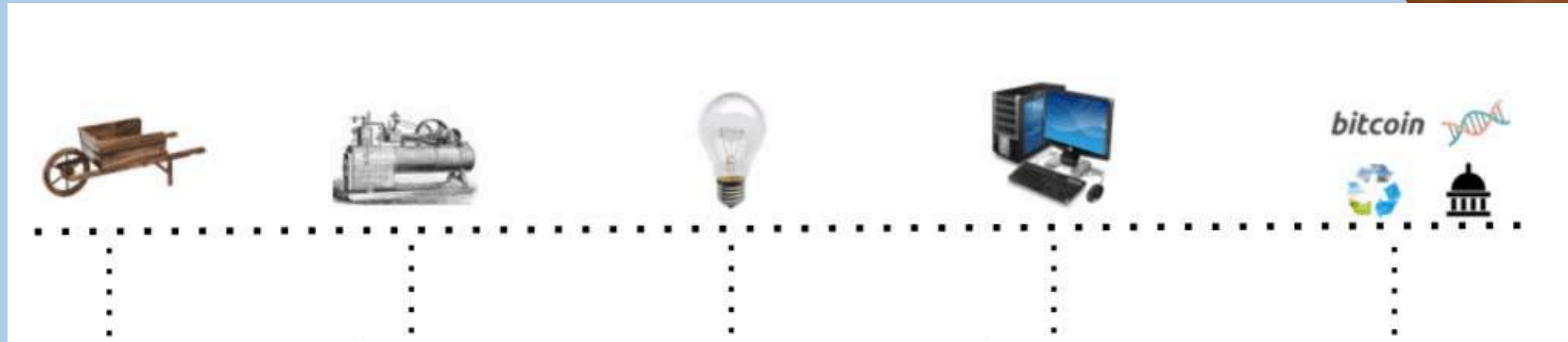
PROMOTING STUDENT ENGAGEMENT

BALANCE BETWEEN THEORY AND PRACTICE

Theory is the basis for understanding.

Practice is the way to apply knowledge.

INNOVATION HAS ALWAYS CHANGED EDUCATION

The age of agriculture

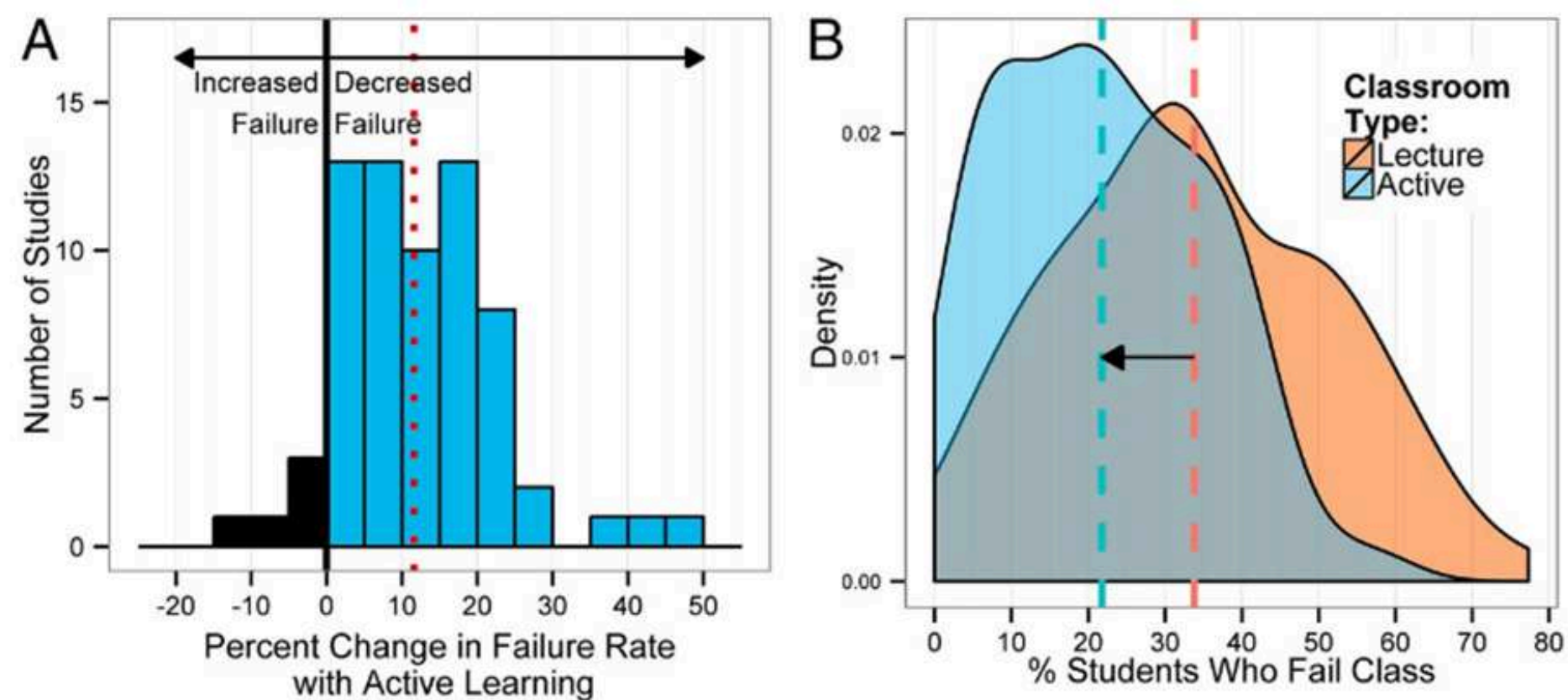The Millennium

The mechanical age

200 m

The age of electricity

100 m

For information visit age

50 m

Transformation age

25 m

Fig. 1.

Changes in failure rate. (A) Data plotted as percent change in failure rate in the same course, under active learning versus lecturing. The mean change (12%) is indicated by the dashed vertical line. (B) Kernel density plots of failure rates under active learning and under lecturing. The mean failure rates under each classroom type (21.8% and 33.8%) are shown by dashed vertical lines.
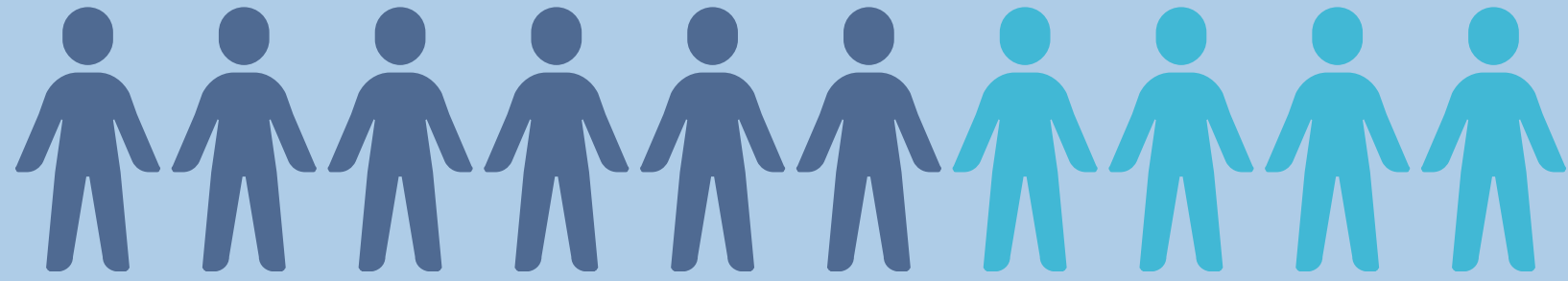
2021m works

- **Robotics engineers**
- **AI engineers**
- **Data analysts**
- **Drone Engineers**
- **Geneticists**
- **Artists**
- **Space engineers**

2035m works

- **Robotics technicians**
- **AI ethicists**
- **Data Explorers**
- **Drone Command Centre Operators**
- **Sequencers**
- **AI-enhanced artists**
- **Space flight managers**

OBJECTIVES

STEAM education at school goes beyond academics and prepares students for real-world challenges.

EXPECTATIONS

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Pagrindinės savybės, pagal kurias veikla gali būti priskiriama STEAM (Science, Technology, Engineering, Arts, Mathematics) veiklai

- Tarpdisciplininė integracija
- Sąsajos su realiu pasauliu
- Tyrimais grįstas problemų sprendimas
- Kūrybiškumas ir inovatyvumas
- Bendradarbiavimas ir komunikacija
- Praktinė ir patyriminė veikla
- Į moksleivį orientuotas ugdymas
- Technologijų naudojimas
- Vertinimas ir refleksija

Science

Sistemingas gamtos ir visuomenės reiškinių tyrimas, grindžiamas stebėjimais, eksperimentais ir analizėmis, siekiant suprasti pasaulį.

Technology

Įrankiai, metodai ir procesai, skirti palengvinti užduotis, spręsti problemas ir kurti inovacijas.

Engineering

Kūrybinis procesas, kurio metu mokslinės žinios ir technologijos naudojamos naujoms sistemoms, produktams ar sprendimams kurti.

The Arts

Kūrybinė išraiška, skatinanti inovacijas, komunikaciją, vizualizaciją ir emocinį ryšį per dizainą, muziką, literatūrą ir kitus menus.

Mathematics

Analizės ir modeliavimo įrankis, leidžiantis tiksliai struktūruoti duomenis, optimizuoti procesus ir spręsti sudėtingas realaus pasaulio problemas.

COMMUNITY

Teachers

Students

**parents
companies
institutions**

VYTAUTAS MAGNUS
UNIVERSITY

The uniqueness of VMU

Academy of Education

Teacher training

Vytautas Magnus University

Biology, Chemistry, Physics, Computer Science, Mathematics, Arts.

Academy of Agriculture

Engineering and agricultural sciences

Objectives

Testing new methodologies and research

STEAM content development

Teacher development

Adult training

Non-formal education to complement formal education

TEAM

In STEAM activities, different disciplines must come together.

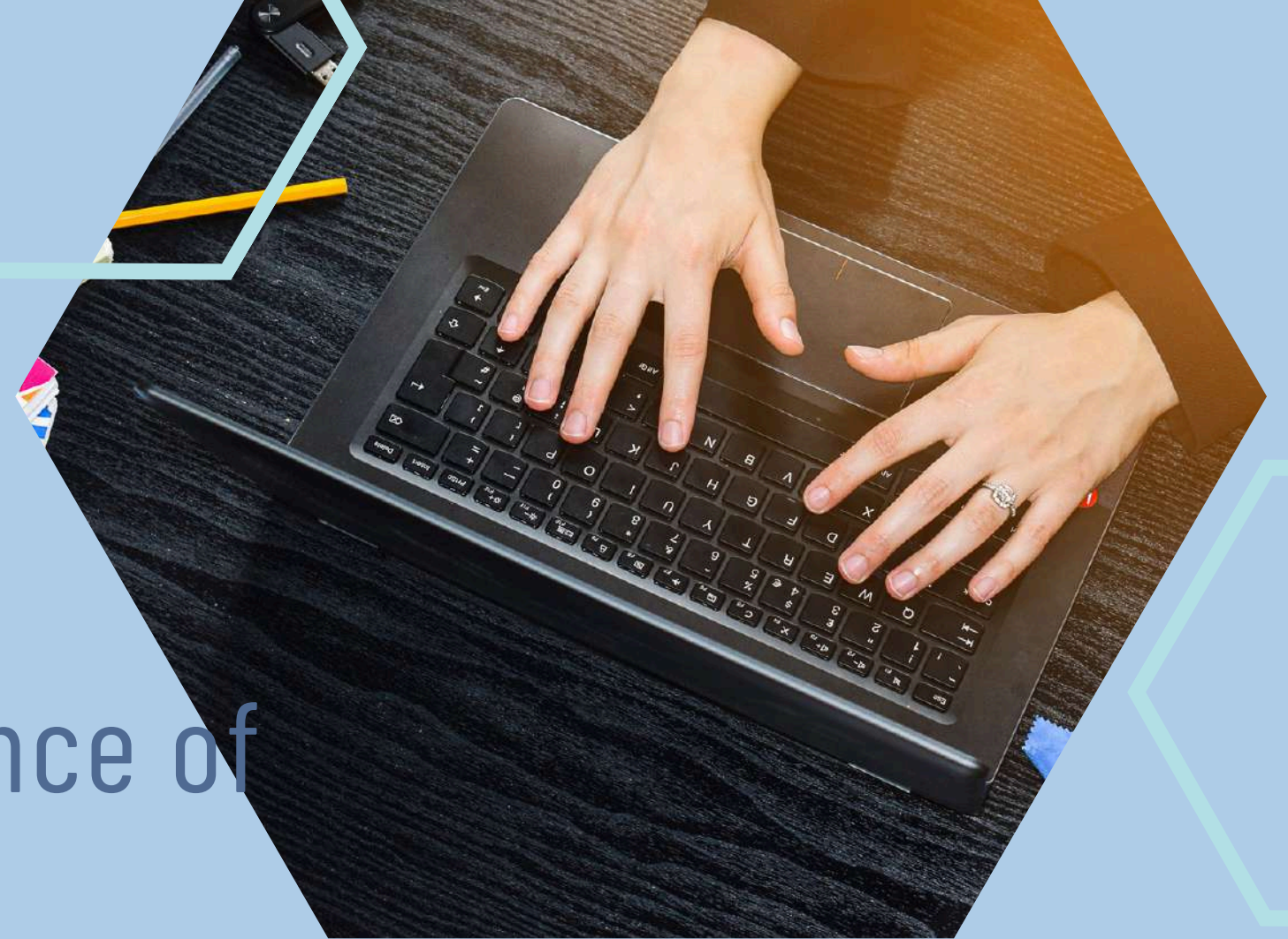**Scientist + Teacher + Business**

Mathematics
Physics
Biology
Chemistry
Engineering
Computer Science

"To develop a well-rounded mind:
Learn the art of science and the science of art. Learn to see.
Understand that everything is connected to everything."

Leonardo da Vinci