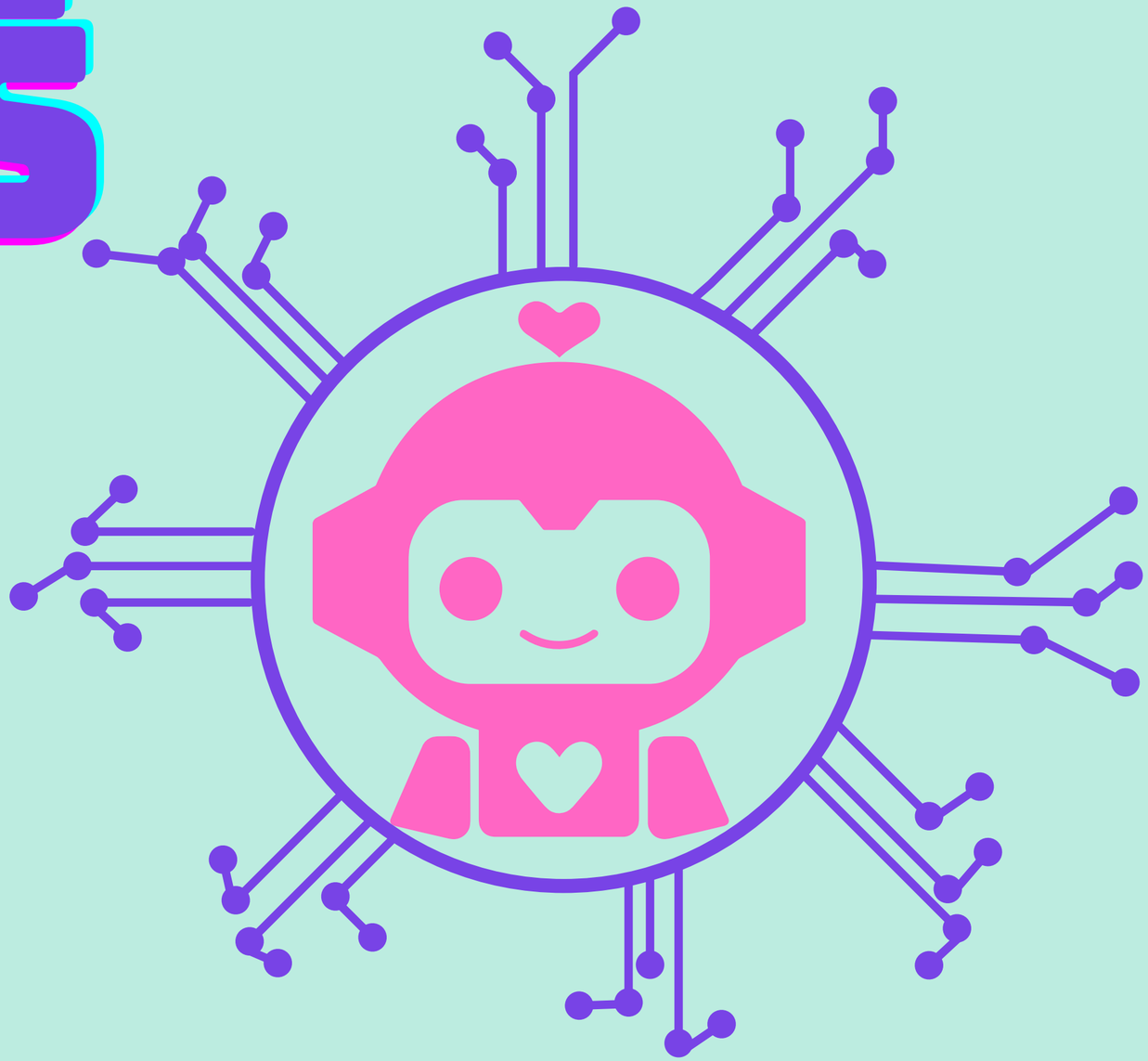
SOCIAL ROBOTS

An overlooked technological trend

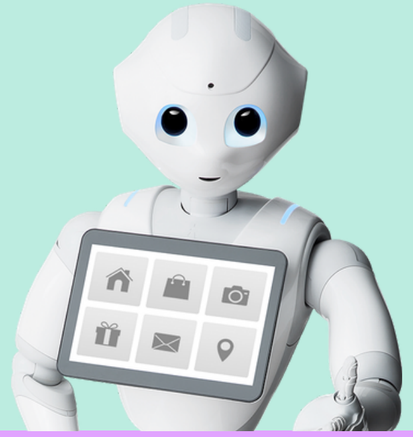


Sorana-Stefana Lehene

tomorrow university of Applied Sciences

SOCIAL ROBOTS

Intelligent machines that can engage in diverse forms of communication with humans







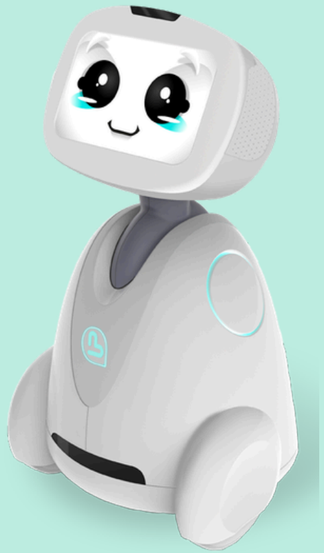
Incorporate AI, natural language processing, computer vision, and machine learning to understand human behaviors, emotions, and speech

Can perform a wide range of functions:

- education
- companionship
- therapeutic support
- entertainment
- assistance





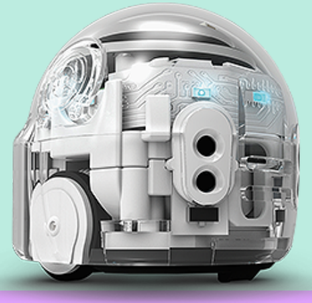


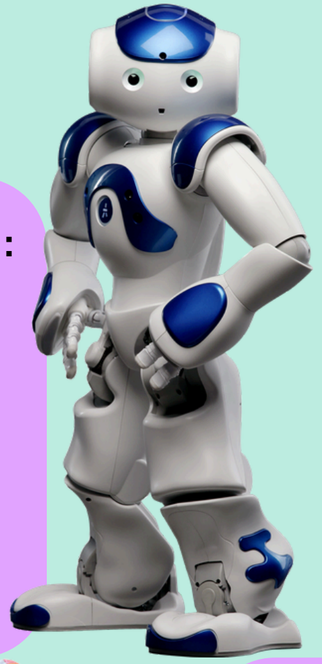
Can exhibit distinctive personalities based on their user.

SOCIAL ROBOTS AND PRIMARY EDUCATION









Types of social robots used for primary education:

- Tutoring robots
- Programming robots
- STEM robots
- Companionship robots
- Language learning robots
- Socially assistive robots
- Interactive storytelling robots etc.

Studies show that social robots can:

- ↑ motivation and engagement in learning activities
- Offer personalized learning depending on user needs
- Assist with meta-cognitive learning strategies
- Exhibit attention-guiding behaviors
- Facilitate collaborative learning
- Offer emotional support strategies:
  - Suggest when to take a break
  - Encourage appropriate help-seeking behavior







Studies show primary school users experience:

- ↑ learning gains
- ↑ motivation
- ↑ progress and efficient performance
- ↑ versatility in social and affective behaviors.

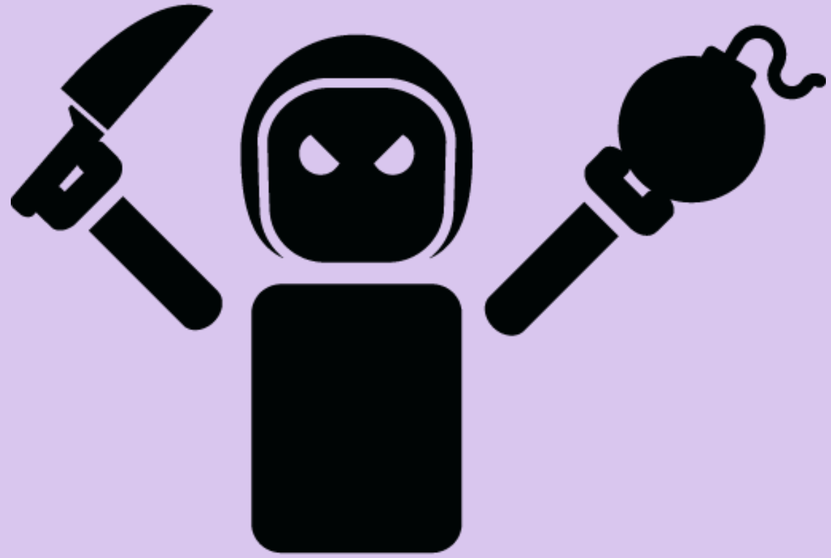
The largest danger of using social robots for primary education is **technology obsolescence**

because failure to keep pace with advancements may result in the loss of clients to competitors offering more advanced solutions

Other ***potential threats*** are:

- **Data privacy concerns**: Inadequate safeguards against data breaches may lead to the unauthorized disclosure of sensitive student information, eroding trust and damaging the company's reputation

- **Platform reliability issues**: Technical glitches and software bugs can disrupt daily activities, causing inconvenience to students and potentially impacting their learning experience.



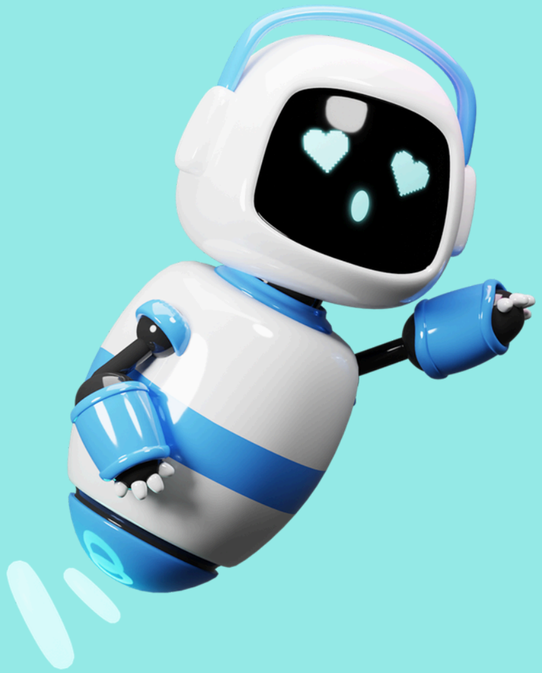
Excessive use of social robots can have **negative** influences on children...



- **Social isolation**: ↓ participation in real-world educational/social interactions
- **Identity confusion** and **psychological challenges**
- **Distraction**: social behaviors can impede the learning and memory processes
- **Dependency**: excessive reliance on emotional support
- **↑ social anxiety.**

The biggest advantage of using social robots is the **24/7 availability!**

round-the-clock access to learning resources and support enhances accessibility, inclusivity and flexibility for learners



The company will benefit from:

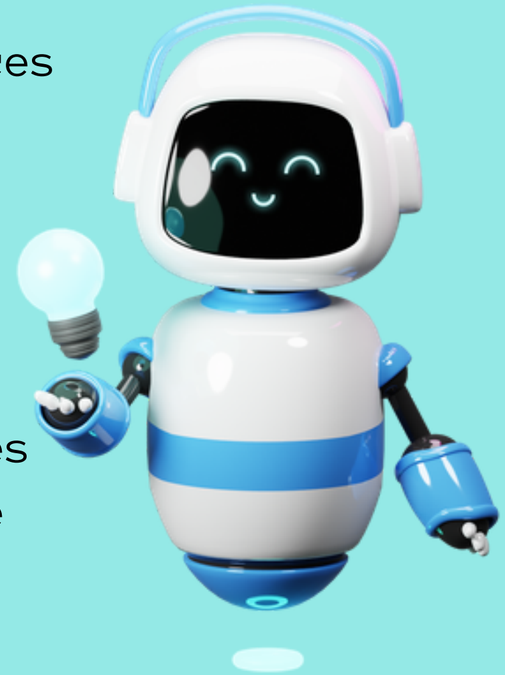
- Adopting **Innovative Tech Methods**: ↑scalability and reach; attract a larger audience which leads to ↑program enrollment, and impact
- **Complementing human instructors,** instead of replacing them
- **Cost and time savings**: Elimination of face-to-face meetings will reduce overhead costs, save time, and optimize resource utilization.

The most important advantage of using social robots is the **environmental impact**

↓ travel requirements for meetings contribute to ↓ carbon emissions, aligning with sustainability goals.

Some benefits for society are:

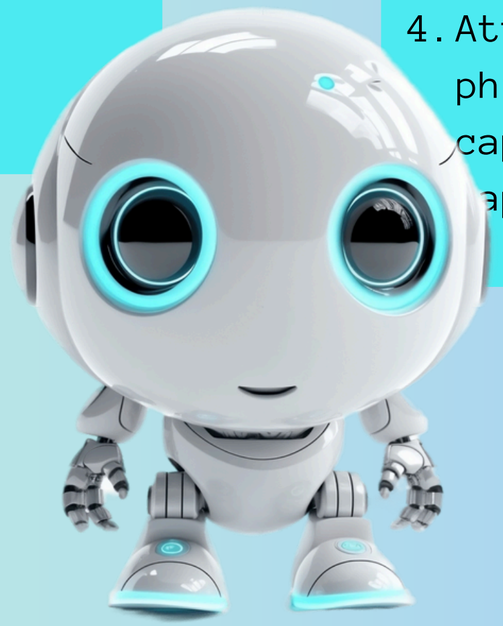
1. ***Innovation in education***: Launching new educational formats and experiences that enhance creativity, motivation, and progress among students
2. ***Consistent delivery of education***: Uniformity in content delivery, and promoting equal learning opportunities for all students
3. Introducing a **supplementary *learning tool*** that grants ***technological fluency*** from a young age
4. ***Motivation and emotional support***: Non-judgmental and empathetic responses from social robots help boost students' confidence, fostering a positive learning environment and academic success.



RECOMMENDATIONS

Minimize threats:

1. Regular evaluation and feedback
2. Limit access to personal data
3. Clear guidelines (privacy, data security, etc.)
4. Avoid inappropriate/harmful content
5. Monitoring and adaptation to user needs
6. Collaborate with psychologists and therapists to ensure safety.



Maximize opportunities:

1. Incorporate social and emotional learning skills
2. Design projects, problem-solving tasks, and other collaborative activities
3. Offer innovative assessment methods (i.e. real-time performance tracking)
4. Attract people from the private sector, philanthropic foundations, venture capitalists, and even angel investors to put capital into research and development.

Introducing **social robots** in workshops and other after-school activities...

Business value?

ROI = ((Total Benefits − Total Costs) / Total Costs) ∗ 100

ROI per 5 years = ((200.000 − 150.000) / 150.000) ∗ 100 = 33,33%

ROI per year = 6,67 %

COSTS:

- Assuming that the robot is sold for **€100,000**
- Yearly costs for maintenance, training, and operational expenses: **€10,000**
- Total expenses for 5 years: **€150,000**

BENEFITS:

- ↑enrollment (early adopter and novelty factor in the first year: 17%, decreases later)
- Over 5 years, assuming 10% growth annually (from a fictional training institute with a yearly turnover of €200,000), results in **€20,000/year**
- Savings on teacher costs: **€10,000/year**
- Savings on material costs: **€10,000/year**
- Potential additional savings based on tax benefits and other factors depending on the country.

Total benefit over 5 years: **€200,000.**

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THANK YOU

