

# LEVERAGING ARTIFICIAL INTELLIGENCE TO SUPPORT STUDENTS WITH **SPECIAL EDUCATION NEEDS**

How AI can help students with learning difficulties, physical challenges, and mental health conditions — and the important risks to keep in mind.

---

Antonia Nikou, Special Education Teacher- 17th Primary School, Kozani, Greece

M.Ed. in Bilingual Special Education

M.Sc. in Information & Communication Technologies (ICT)

M.Ed. in School Administration & Management

## Students with Disabilities Are Being Left Behind

50%

of 93 million children  
with disabilities  
are NOT in school

2x

more likely to leave  
school before  
finishing

27pts

lower employment  
rate compared to  
people without disability

50%

of adults with  
disabilities have  
low reading skills

*"Including children with disabilities in all parts of life must be a priority.  
Every child, everywhere, has something to offer." — UNICEF, 2024*

## Special Education Needs: Three Main Types

### 01

#### Learning Difficulties

---

- Problems with reading, writing, maths, or paying attention
- Examples: Dyslexia, Dysgraphia, Dyscalculia
- Does NOT affect intelligence
- Brain-based — not caused by effort or attitude

### 02

#### Physical Challenges

---

- Affect hearing, vision, speech, or movement
- Examples: hearing loss, visual impairment, speech disorders
- Can be from birth, illness, or injury
- Over 430 million people have hearing loss worldwide

### 03

#### Mental Health Conditions

---

- Affect how a person thinks, feels, or behaves
- Examples: Autism (ASD), ADHD
- Often begin during school years
- Linked to stress, social isolation, bullying

# Key Terms Explained Simply

AI is now everywhere — in search engines, chat tools, and education. Here are the main concepts you need to know:



## AI System

A computer program that receives information, learns from it, and produces results — like predictions, suggestions, or decisions.

→ Example: A reading app that watches how a student reads and automatically suggests easier or harder texts.



## Generative AI

A type of AI that creates new content — text, images, music, and more — not just analyse what already exists.

→ Example: ChatGPT, Google Gemini, Microsoft Copilot.



## AI Techniques

The methods that allow AI to learn and make decisions. The most common are machine learning, deep learning, and neural networks.

→ Example: A technique that detects dyslexia by analysing thousands of reading patterns.



## Large Language Models (LLMs)

A type of Generative AI trained on huge amounts of text. You write a question (prompt) and it writes a useful answer.

→ Example: A teacher types 'create a worksheet for a student with dyslexia on fractions' and gets a ready-made result.



## AI Technologies

The tools and platforms built using AI techniques — like chatbots, voice recognition, image recognition, and robots.

→ Example: A chatbot that answers student questions, or a robot that helps children with autism practise conversations.



## How AI Is Used in Education

AI tools in schools can: adapt lessons to each student, give instant feedback, help students with disabilities access content, support teachers with lesson planning.

→ For students with SEN: AI can personalise support, detect difficulties early, and help communication.

# AI Tools Backed by Research — for Different Student Needs

## LEARNING DIFFICULTIES

### Dyetective

Screens & trains students with dyslexia  
80% accuracy · 130+ countries

### BESPECIAL

Personalised learning tools  
for university students with dyslexia

### KOBI App

Real-time reading help  
for students with dyslexia · Slovenia

### Dynamilis

Detects handwriting difficulties  
96% accuracy · School Rebound

### Calcularis 2.0

Maths games for students  
with dyscalculia · 250+ levels

## PHYSICAL CHALLENGES

### aiD Project

Sign language ↔ text for students  
with hearing loss · EU funded

### Digital Textbooks

UNICEF accessible textbooks  
for students with visual/hearing needs

### AI Screener

Detects speech problems early  
in young children · Univ. Buffalo

### Voiceitt

Turns non-standard speech  
into clear words for communication

### Eye-gaze Tech

Controls devices using eye  
movement for motor impairments

## MENTAL HEALTH

### Kiwi Robot

Robot helps children with autism  
practice social & maths skills

### ECHOES

Virtual garden where children  
with autism practice social skills

### ADT Features

Simpler text and visual tools  
to help students with ADHD focus

### CoolCraig / Chillfish

Digital tools to help students  
manage emotions and stay focused

### GenAI Tools

ChatGPT-style tools help break  
tasks into steps for ADHD students

# AI & Special Education in Greece — What Is Happening Now

## Legal & Structural Framework

- Law 3699/2008: the main SEN law — guarantees free, compulsory special education at all levels
- KEDASys: public assessment and support centres for students with SEN (updated by Law 4823/2021)
- Schools provide: integration classes, parallel support (co-teachers), and special school units
- Assistive technology (PCs, Braille, software) provided free via KEDASY recommendation
- Students can take exams orally or with extended time — adaptations guaranteed by law

## Key Challenges Remaining

- Shortage of qualified SEN teachers — ~37% of co-teachers lack SEN qualifications (research finding)
- No dedicated national AI-for-SEN strategy or evaluation framework yet
- Digital divide: rural and island schools have unequal access to technology
- SEN AI programmes mostly general education-focused — not specifically for SEN students
- Long waiting times for KEDASY assessment — delays in receiving official support

## AI Teacher Training Programmes

- IEP: 2nd training cycle — 1,000 teachers in Generative AI (Nov 2025); 535 trained in first cycle
- 155,000 teachers in training for the Digital School; 27,090 in accessible digital design
- Univ. of Patras (KEDIVIM): 1st AI certificate for teachers in Greece — tens of thousands enrolled
- AI certification gives 2 ASEP appointment points for both general and SEN teachers
- Training includes use of AI tools for differentiated instruction and inclusive pedagogy

## AI Tools & University Research

- AI personalised learning platform launching 2025–26 (Digital Tutoring — 15,000+ exercises)
- 13 regional Innovation Centres opening Dec 2025 — AI, AR, robotics and STEM labs
- Univ. of Aegean: SEN training + AI in education programmes with ECTS accreditation
- Greek researchers active in AI/SEN: aiD project (Greek Sign Language AI dataset, 28K+ videos)
- Univ. of Thessaly & others: research on AI-assisted reading support tools for dyslexia

## Important Problems to Watch Out For

### Privacy of Student Data

AI tools collect a lot of sensitive information about students — even eye movements and facial expressions. Young students cannot fully understand what happens to their data. Data could be misused or sold.

### Unfair AI Decisions

AI can repeat unfair patterns from the past (by gender, race, disability). Students with SEN are more at risk. For example, facial recognition systems often make more mistakes with indigenous students.

### Environmental Impact

Training AI uses as much electricity as a whole country (e.g. Austria). By 2027, water used for AI cooling could exceed the UK's total annual water use. The environmental cost is high.

### Trying to 'Fix' Students

Some AI tools treat disability as a problem to be corrected instead of helping students as they are. Tools must be designed to support and empower, not to make students 'normal'.

### Not Enough Research

Most AI tools for students with SEN have been tested on very small groups. We don't yet know if they truly work better than simpler, non-AI tools. More rigorous studies are needed.

### Access for All Schools

Expensive AI tools create gaps between rich and poor schools. Over time, prices often increase. Students from disadvantaged backgrounds may be left behind if only wealthy schools can afford these tools.

# How to Put AI to Work Responsibly in Schools

## Design Together

- Include students with SEN, parents and teachers from the start
- Test tools in real classrooms and listen to feedback
- Follow Universal Design for Learning (UDL) principles

## Train Teachers

- Teach educators how AI works and what its limits are
- Help them check if AI recommendations are correct
- Example: Korea invested \$740M to train all teachers on digital tools

## Work Together Internationally

- Share research and best practices across countries
- Create common data rules for international studies
- Build open-source AI tools available to all countries

## Fund Research Better

- AI in education needs flexible, faster funding
- US NSF: new 'Seedlings to Scale' programme supports tools step by step
- Foundations like Jacobs, Nuffield fund independent studies

## Connect Public & Private Sectors

- Governments and companies should work together with oversight
- Example: Estonia partnering with OpenAI & Anthropic for all schools
- Public bodies keep companies accountable for quality and safety

## Coordinate Charities & Funders

- Avoid duplicating efforts across different funders
- Share findings and pool resources for maximum impact
- Tools Competition: awards funding to equity-focused EdTech projects

## Four Key Actions for Governments and Schools

01

### Fair & Ethical Design

Follow principles for trustworthy AI. Check AI tools for unfair patterns affecting gender, race, or disability. Use Universal Design for Learning so all students can use the tool. Be transparent about how AI works.

Fairness · Transparency · Accountability

02

### Strong Research & Long-term Monitoring

Compare AI tools with simpler non-AI alternatives. Use cost-benefit analysis before buying. Run long-term studies to check effects on learning, well-being, and social outcomes. Share results openly.

Evidence-based · Independent · Long-term

03

### Protecting Student Data

Create clear rules about what data can be collected (especially body/biometric data). Tell students, parents, and teachers how data are used. Invest in open, privacy-safe datasets for research.

Privacy · Consent · Security

04

### Standards & Accountability

Require AI tools to be certified before entering classrooms. Minimum standards: built with SEN students, backed by research, comes with teacher training, and is safe and sustainable.

Certification · Standards · Oversight

## What We Know — and What Still Needs to Change

### ✓ Promising but Still Early

AI tools show real potential for helping students with dyslexia, autism, speech problems, and more. But most tools have not been tested on large, diverse groups. We need more solid evidence.

### ✓ Personalisation is AI's Strength

The most useful AI applications adapt to each student in real time — matching the wide variety of ways SEN can appear. This is genuinely something AI can do better than many standard tools.

### ✓ Mixed Teams Are Essential

The best tools involve teachers, doctors, AI experts, and people with disabilities all working together from design to real use. No single expert group can build a good tool alone.

### ⚠ Does AI Actually Add Value?

For every tool, we must ask: does the AI version work much better than a simpler tool? The extra cost, data risk, and environmental impact must be justified. Right now, evidence is often missing.

### ⚠ Inclusion Must Be Designed In

AI tools must be built WITH students with SEN, not just FOR them. Designing to make students seem 'normal' is harmful. Students with SEN must shape the tools that are meant to help them.

### ⚠ Rules & Oversight Must Catch Up

Policy frameworks, safety standards, data protection rules, and accountability mechanisms are urgently needed to keep pace with how quickly AI is entering schools and classrooms.

## CONCLUSION

# Every Student Deserves Support

*AI can help level the playing field for students with SEN — but only if we build it right, with the right people, guided by evidence, and governed with accountability.*



Invest in independent, long-term research on AI tools for SEN



Always co-design tools WITH students with SEN — not just for them



Set certification standards before AI tools enter classrooms



Put strong data protection and accountability rules in place



Train educators to evaluate and use AI tools in a fair way



Build international collaboration, open-source models, and shared data

## Common Questions & Answers — Part 1

### Q Can AI replace teachers for students with SEN?

A No. AI tools are designed to support teachers, not replace them. Teachers bring human understanding, empathy, and professional judgement that AI cannot provide. AI is most useful when it helps teachers save time and personalise support — while the teacher remains in charge.

### Q Are AI tools safe for children with disabilities?

A It depends on the tool. Some well-designed tools are safe and carefully tested. Others carry real risks — such as collecting sensitive data without proper consent, or producing biased recommendations. Every AI tool should be reviewed by experts, including people with disabilities, before being used in schools.

### Q Do AI tools actually work for students with SEN?

A Some tools show promising early results — for example, Dynamilis detects dysgraphia with 96% accuracy, and Kiwi helped 92% of children with autism improve social skills. However, most tools have only been tested on small groups. Larger, longer-term studies are still needed before we can be fully confident in the results.

### Q Is AI only useful for students already diagnosed with SEN?

A Not necessarily. Many AI tools — such as UNICEF's Accessible Digital Textbooks — are designed for all students, and benefit students with undiagnosed or mild difficulties too. AI can help detect needs early, even before a formal diagnosis, and adapt learning for everyone in a diverse classroom.

## Common Questions & Answers — Part 2

### Q Who should decide which AI tools enter a school?

A

Decisions should involve multiple people: teachers, school leaders, parents, and — crucially — students with SEN themselves. AI tools should also meet minimum quality standards, including proof that they work, that they have been tested, and that they protect student data. Governments can help by requiring certification before tools are approved for school use.

### Q What are the biggest risks of using AI with students with SEN?

A

The key risks are: (1) Privacy — sensitive data about students can be collected and misused. (2) Bias — AI can treat students unfairly based on race, gender, or disability. (3) Techno-ableism — tools designed to 'fix' students rather than empower them. (4) Cost gaps — expensive AI creates inequality between rich and poor schools. (5) Lack of evidence — many tools are not properly tested.

### Q Is AI accessible for schools in low-income countries?

A

Not yet, in most cases. Many AI tools are expensive, require reliable internet, and are only available in a few languages. UNICEF's Accessible Digital Textbooks initiative is one example of a tool designed to work offline and in multiple countries. International collaboration and open-source AI models are key to making AI more accessible globally.

### Q What should schools do before adopting an AI tool for SEN students?

A

Schools should check: Is there solid evidence it works? Was it designed with input from students with SEN? Does it protect student data? Does it come with teacher training? Is it affordable long-term? And — does it truly improve on a simpler, non-AI alternative? Only if these questions are answered positively should a tool be adopted.