TEACHERS' ATTITUDES TOWARDS THE USE OF TECHNOLOGY IN EDUCATION
WHY WE NEED AI IN EDUCATION?

- Intelligent Tutoring Systems
- Automated Grading and Assessment
- Chatbots and Virtual Assistants
- Curriculum Planning
- Learning Analytics
- Content Recommendation
People and experiences

HUMAN INTELLIGENCE
Human unique intelligence (Human's tacit knowledge)

HYBRID INTELLIGENCE
(Human-Augmented AI + Augmented Human Intelligence)

ARTIFICIAL INTELLIGENCE
AI beyond human intelligence (Machine's tacit knowledge)

Data and algorithm

- flexible
- creative
- emphatic
- instinctive
- commonsensical

- fast
- cheap
- efficient
- scalable
- consistent
1. Design, Development & Use of AI in Education

2. Educating People about AI so that they can use it effectively & ethically

3. Innovation in Education to prepare people for an AI driven world

## AI competency framework for teachers (AI CFT) under development

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<tr>
<th>Aspects</th>
<th>Progression</th>
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<td>Acquisition</td>
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<td><strong>Human-centred Mindset</strong></td>
<td>Benefit-risk analysis</td>
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<td><strong>Ethics of AI</strong></td>
<td>Ethical principles</td>
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<td><strong>AI Foundations &amp; Applications</strong></td>
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<td><strong>AI Pedagogy</strong></td>
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<td><strong>AI for Professional Development</strong></td>
<td>AI as enabler of lifelong professional learning</td>
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# A TAXONOMY OF AIED SYSTEMS

<table>
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<tr>
<th>STUDENT-FOCUSED AIED</th>
<th>TEACHER-FOCUSED AIED</th>
<th>INSTITUTION-FOCUSED AIED</th>
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<tr>
<td><strong>AI-assisted Apps (e.g., maths, text-to-speech, language learning)</strong></td>
<td><strong>Plagiarism detection</strong></td>
<td><strong>Admissions (e.g., student selection)</strong></td>
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<td><strong>AI-assisted Simulations (e.g., games-based learning, VR, AR)</strong></td>
<td><strong>Smart Curation of Learning Materials</strong></td>
<td><strong>Course-planning, Scheduling, Timetabling</strong></td>
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<td><strong>Classroom Monitoring</strong></td>
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<td><strong>Automatic Essay Writing (AEW)</strong></td>
<td><strong>Automatic Summative Assessment</strong></td>
<td><strong>Identifying Dropouts and Students at risk</strong></td>
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<td><strong>Chatbots</strong></td>
<td><strong>AI Teaching Assistant (including assessment assistant)</strong></td>
<td><strong>e-Proctoring</strong></td>
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<td><strong>Automatic Formative Assessment (AFA)</strong></td>
<td><strong>Classroom Orchestration</strong></td>
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<td><strong>Learning Network Orchestrators</strong></td>
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<td><strong>Dialogue-based Tutoring Systems (DBTS)</strong></td>
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<td><strong>Exploratory Learning Environments (ELE)</strong></td>
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<td><strong>AI-assisted Lifelong Learning Assistant</strong></td>
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WHAT IS THE IMPACT OF AI IN THE EDUCATION INDUSTRY?

AI solves several modern education challenges, such as closing the technology gap between students and teachers, keeping the learning system ethical and transparent, allowing remote learning, and developing quality data and information solutions for the modern education process.
WHAT ARE THE BENEFITS OF INTEGRATING AI INTO THE EDUCATION SYSTEM?

- **Personalized instructions** according to each student’s needs
- Increased *motivation* and *engagement* among students
- Improved *data analysis* to gain insights into student progress and performance
- Platforms for adaptive learning that modify pace and material according to student aptitude
- Efficient administrative processes, including *scheduling* and *grading*
- Access to *chatbots and virtual tutors* for quick help
- Automated repetitive tasks, allowing teachers to concentrate more on teaching
- Higher *immersive and interactive learning environments*
- Early diagnosis of *learning challenges* and prompt intervention
- Increased educational accessibility through options for online and remote study
EXAMPLES OF GENERATIVE ARTIFICIAL INTELLIGENCE

A 3D printer developed by a student that writes homework in handwriting.

Homework done with ChatGPT is being printed in handwriting.

Homework, reports, and publications written with ChatGPT can be detected.
Better search engines for information retrieval (e.g. ChatGPT, Bing, Co-Pilot etc.)

- Content, literature, topic review (e.g. Elicit, Consensus, Jenni, Perplexity etc.)

- Qualitative labelling/marking and content generation tasks (e.g. LLMs tend to outperform).
AI STRATEGY OF TÜRKIYE

- The Strategy, with the vision of "producing value on a global scale with an agile and sustainable AI ecosystem for a prosperous Türkiye," is designed around 6 strategic priorities.
  - Training AI Experts and Increasing Employment in the Field
  - Supporting Research, Entrepreneurship, and Innovation
  - Expanding Access to Quality Data and Technical Infrastructure
  - Implementing Regulations to Accelerate Socio-economic Adaptation
  - Strengthening International Collaborations
  - Accelerating Structural and Workforce Transformation
- Within the scope of these strategic priorities, 24 objectives and 119 measures have been determined.
NATIONAL ARTIFICIAL INTELLIGENCE STRATEGY (2021-2025)
THE STUDIES BEING CARRIED OUT IN THE COUNTRY

- 145 Technology centres
- 50,000 students
- 393 Science & Art Centres
- 4,329 teachers
- 102,500 gifted and talented students
- 18,936 middle schools with 5,293,065 students
- 12,804 high schools with 6,545,369 students
- 129 public universities
- 75 private universities
In the Project, we aim to have the future of engineers who have 21st century skills.

- 16,000 students have been educated.
- 36 months educational programme.
- In the first 24 month, the following courses are taught:
  - Design and Production (Design thinking) - 12 week
  - Robotics & Coding - 13 week
  - Electronic Programme & The Internet of Things - 13 week
  - Advanced Robotics - 12 week
  - Material Science and Nanotechnology - 7 week
  - Energy Technologies - 12 week
  - Aviation and Space Technologies - 12 week
  - Cyber Security - 8 week
  - Artificial Intelligence - 8 week
  - Mobile Application - 6 week
  - Software Technologies - 12 week
- Last 12 month → Having their own projects with their team members and mentors.
DENEYAP TECHNOLOGY CENTERS
DENEYAP TECHNOLOGY CENTERS

- Practical Teaching Method
- Technology Based 11 Courses
- 36 Month-All Process
- Specialist in All Fields
- Projects and Team Investigations
145 TECHNOLOGY CENTRES IN 81 PROVINCES OF THE COUNTRY
DENEYAP TECHNOLOGY CENTERS

**Student Selection Process**

- **National Exam: (40 questions at all)**
  - 15: Science
  - 15: Maths
  - 6: Algorithm
  - 4: Cultural questions related to STEM Fields

- **Practical Exam:**
  - Example Topics: Car Activity, Earthquake proof house, Electricity generation with wind energy,…

**Acception Criteria**

- Total Score Calculation: 70% National Exam + 15% Online Training and Task Completion + 15% Practical Exam
- Success Ranking: First 100 students among middle school students + First 60 students among high school students
- 160 students for each center

**Trainer Selection Process**

- Preliminary Assessment
- Technical Assessment
- Competency-based Assessment
- Face-to-face interview
- Technical Training (by suppliers)
- Pedagogical Training (by academics who develop content)
SCIENCE FAIR IN ROBOTICS
DESIGN & PRODUCTION
DENEYAP TECHNOLOGY CENTERS

- https://www.deneyap.org/en/
AI CURRICULUM IN DENEYAP TECHNOLOGY CENTERS

- Artificial intelligence technologies are a suitable technological method to improve students' cognitive and analytical thinking skills.

- When this method is carried out with an appropriate instructor integration, it is thought that it will contribute to the development of students' analytical and mental thinking, professional and social development, high-level problem solving and creativity skills.

- In the prepared curriculum, it is aimed to guide students and instructors in the process of developing and implementing AI technologies programmes.
• In order for teachers to help students develop, a step-by-step code writing teaching model was used. For this purpose, the learning cycle of "Perceive, Design, Act, Execute and Decide" has been developed by the curriculum developers at every stage of this book.

• The curriculum is designed as an 8-week lesson plan. Eight weeks of content has been prepared so that each week has one chapter.

• It is aimed to develop projects from the 4th week on artificial intelligence models that students have learnt.
BEFORE UNDERSTANDING ARTIFICIAL INTELLIGENCE
We take in information better when it is visual.

We remember big picture better than details.

How brain learns:

Sleep largely affects learning and memory.

Sleep debt significantly reduces ability to learn new information.

We learn the best while teaching others.

We learn new information better when it's interleaved.

Insights: Belle Beth Cooper, CRW Blog
HOW THE BRAIN LEARNS ON THE SCREEN

- Visuals are processed 60,000 times faster than text.
- 90% of information transmitted to the brain is visual.
- 40% of people respond better to visual information than text.
AI CURRICULUM FOR MIDDLE AND HIGH SCHOOL STUDENTS

- Week 1: Artificial Intelligence with Python
- Week 2: Artificial Intelligence Mathematics and Fuzzy Logic
- Week 3: Machine Learning Concept and Bayesian Learning for Probabilistic Solutions
- "Week 4: Consistent Decisions with Decision Trees
- Week 5: Artificial Neural Cells and Artificial Neural Networks
- Week 6: Agent Based Modelling
- Week 7: Intelligent Optimisation
- Week 8: Advanced Solutions with Deep Learning
"Artificial intelligence consists of three main components as shown: datasets, learning algorithms, and the decision-making process. In artificial intelligence, the dataset is formed by organizing text, image data, time, length measurements, and video recordings. Learning algorithms comprise many subfields such as artificial neural networks, machine learning, and deep learning. Although learning algorithms in artificial intelligence may seem complex, they fundamentally consist of algorithms and programming."
PROBLEM MODELING IN ARTIFICIAL INTELLIGENCE
▪ **Problem:** Students determine whether the problem for artificial intelligence solutions is of classification, regression, or clustering type.

▪ **Data Collection:** Students gather data related to the problem from open access websites (such as Kaggle, Github, etc.) or from data they have collected themselves.

• **Data Preprocessing:** At this stage, data preprocessing steps such as filling in missing data and removing irrelevant data are performed on the collected data to prevent potential problems in artificial intelligence.

• **Training:** After data preprocessing, the data, which has been made meaningful, is used to train artificial intelligence models.

• **Testing:** The accuracy of the trained models is evaluated using test data to obtain meaningful results.

• **Conclusion:** The model that provides the most accurate results on the tested data is selected.
CONTENT OF THE CURRICULUM

- Artificial intelligence technologies are a suitable technological method to improve students.

@YavuzSamur
THE ROLE OF MINISTRY OF NATIONAL EDUCATION FOR AI

EBA (Education information network)

- https://www.eba.gov.tr/
THE ROLE OF MINISTRY OF NATIONAL EDUCATION FOR AI
AI TOOLS TO BE USED IN EDUCATION

- yapay_zeka_aracları.pdf
THANK YOU FOR YOUR ATTENTION 😊