BURSA İNOVASYON MERKEZİ

STEM ve YAPAY ZEKA TEMA: SÜRDÜRÜLEBİLİR TARIM PROGRAMI

STEM ETKİNLİK PLAN ŞABLONU

Team Name:	GreenTech
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Topic Title:	Sustainable Agriculture with Artificial Intelligence Applications
Learning Objectives / Goals:	Ensuring that students develop awareness about sustainable agriculture and animal husbandry, enabling them to examine the topic in depth, and helping them transfer the knowledge they learn to new situations. Within the scope of the Türkiye Century Education Model, the aim is to raise productive individuals.
Related Learning Outcomes:	Science: Students make scientific inferences about the importance of recycling for the effective use of resources.
	Information Technologies: Students develop an algorithm to solve a problem, test the algorithms they build, and use simple artificial intelligence tools.
	Engineering: Students apply engineering design processes to solve problems encountered in daily life.
	Mathematics: Students gain decision-making skills by collecting and analyzing data on digital platforms.
	Other: Through an interdisciplinary education approach, students integrate knowledge from different fields into engineering problems.
Grade Level:	Middle School – 5th Grade
Duration:	60 minutes
21st Century Skills:	Digital literacy, critical thinking and problem solving, creativity and innovation, collaboration and teamwork, self-management and responsibility.
Learning Approach:	This activity plan is structured according to the 5E model (Engage, Explore, Explain, Elaborate, Evaluate) so that students aged 10–12 can explore sustainable agriculture through artificial intelligence applications.
Tasks (Teacher and Student Roles):	Teacher forms homogeneous groups, enables students to discover problems, creates a collaborative learning environment within groups, and provides guidance, support, monitoring and feedback throughout the process.
Materials / Technologies:	Computer or tablet with internet access, Teachable Machine, Mblock, Scratch AI programs, App Inventor software, paper and pencil, smart board.
LESSON PLAN ACCORDING TO THE 5E LEARNING MODEL	Students watch a video showing the integration of artificial intelligence with agriculture and animal husbandry, including examples emphasizing the importance of sustainable agriculture. Current news about avian influenza cases are shown and discussed.

	Students work in small groups, research problems encountered in agriculture or animal husbandry, and investigate how artificial intelligence could be used to solve these problems.
	Groups present the information they discovered, describe the identified problem and explain the role of artificial intelligence in solving it.
	Students design a simple AI algorithm model (for example separating healthy and diseased chickens), draw their design and workflow diagrams, and exchange ideas between groups.
	Groups present their designs and receive feedback. Students complete a self-evaluation form describing what they learned and which skills they developed.
Related Resources:	https://teachablemachine.withgoogle.com https://appinventor.mit.edu https://www.mblock.cc/ https://scratch.mit.edu/ https://www.tensorflow.org/
References:	Ahmad, M. et al. (2021). Artificial Intelligence in Agriculture: Opportunities and Challenges. Agriculture Systems. Çolak, M., & Demir, A. (2020). Agriculture 4.0 Applications in Turkey. Kamilaris, A., & Prenafeta-Boldú, F. (2018). CNN Applications in Agriculture.