



CASE STUDY

INDOOR AIR QUALITY MONITORING
SOLUTION FOR DR. NATUK BIRKAN PRIMARY
& SECONDARY SCHOOL

Introduction

Most people are aware that outdoor air pollution can impact their health, while indoor air quality related health risks are widely underestimated. The U.S. Environmental Protection Agency (EPA) studies indicate that indoor levels of pollutants may be even five times higher than outdoors. Besides, most of us spend about 90% of their time indoors with insufficient air exchange.

One of the main reasons for poor well-being indoors is the high concentration of carbon dioxide (CO₂) that makes people anxious, sleepy and unable to concentrate.

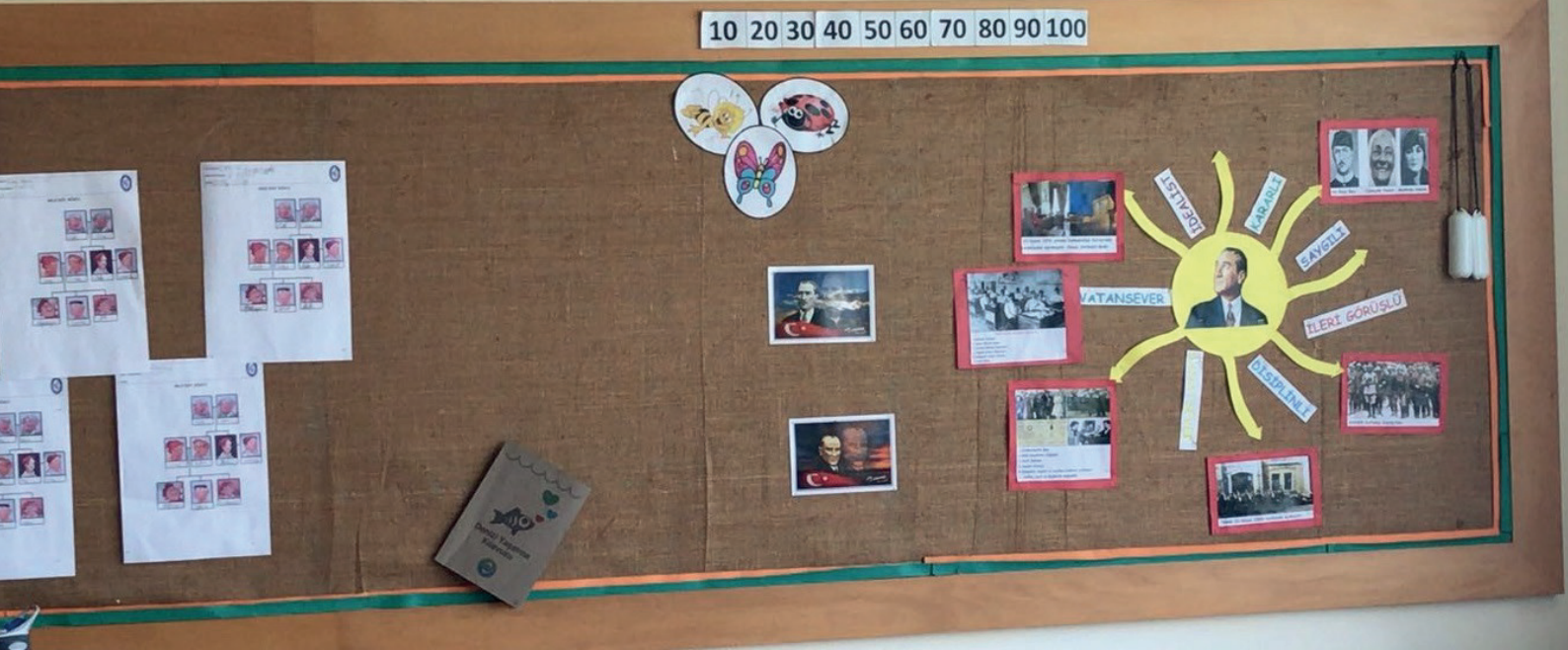
Lately indoor air quality has been of a great concern for Istanbul Technical University Development Foundation's Dr. Natuk Birkan Primary & Secondary School in Istanbul, Turkey. In order to improve air quality and children well-being, school board decided to deploy Aranet monitoring system.

Challenge

The staff of Dr. Natuk Birkan Primary & Secondary School reported that during school lessons many students frequently seemed tired and had problems concentrating. The staff was concerned that indoor air quality and exceeded CO₂ levels in classrooms might be causing the problem.

Research proves that most classrooms quickly exceed the allowed limit (1000ppm) for the CO₂ concentration causing long lasting tiredness, difficulties to concentrate, headache, shortness of breath, sinus congestion, coughing, sneezing, dizziness, nausea and irritation of the eyes, nose, throat and skin which results in lowered performance and is specifically dangerous to student overall health since children are more sensitive to environmental factors.

The main aim of the school board was to increase the productivity of the students, as well as improve the comfort level in the classrooms, by decreasing CO₂ concentration indoors.



Solution

To ensure that the level of CO₂ never exceeds the recommendations, the school introduced a pilot Aranet CO₂ monitoring system in classrooms. The staff installed Aranet PRO with 3 Aranet CO₂ sensors and 3 Aranet T/RH sensors.

There are 27 classrooms of 45sqm in the school. On average there are 20-24 students in each classroom during the lessons. Aranet wireless CO₂ and temperature monitoring system was placed in 3 classrooms to monitor the CO₂ levels and send alerts, when the desired CO₂ levels were exceeded.

Aranet wireless monitoring systems detected that in some classrooms the level of CO₂ could be as high as 3535 ppm, which is almost 4 times the recommended amount. Wireless temperature sensors also detected that occasionally the temperature in classrooms reached 28°C, which can have a significant impact on comfort levels indoors.

Result

The staff of the school were able to monitor the air quality indoors and react accordingly to ventilate the classrooms when needed.

"The student performance improved significantly and they are much more content overall, when classrooms are ventilated in a timely manner. With Aranet solution, we are now able to decide immediately when to increase the air flow to make the air fresh. Thanks to Aranet solution we can now view real-time data and receive alerts if the readings exceed the threshold." Mr. Hüseyin Alabay, Head of Information Technologies Department.



The easiest and fastest way to start monitoring indoor air quality is to install wireless sensor monitoring systems, such as Aranet. Aranet is quick to deploy, easy to operate and provides alerts when the CO₂ levels have crossed thresholds and room needs ventilation. Aranet helps boost productivity levels, the overall well-being of students and school staff!

Aranet offers:

- 3km/1.9 mi receiving range between base station and sensors;
- 100 sensors per base station;
- Complimentary software for data analysis;
- Simple and quick installation;
- SMS and e-mail alerts;
- 24/7 wireless temperature, humidity and CO₂ monitoring

Watch this video to learn more about indoor air pollution
<https://www.youtube.com/watch?v=kBpTibMcQzA>

Want to learn more about how to improve productivity by optimizing CO₂ levels? Discover more www.aranet.com