

IIIT® turns the air we breathe into a discovery we can see

The air around us contains many particles and processes that we do not ordinarily see. The IIIT® Project makes it possible to capture these invisible processes in a condensate that can be observed. This allows pupils and the public to work with a real sample of air and consider what is happening in the environment around us.

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IIIT® – Open the Book That Is the Air

Air is the largest library of processes through which we pass every day – and we almost never open it.

We breathe it.

We move through it.

We live in it throughout our lives.

Yet we generally perceive it as empty space. Something that is everywhere, but that we do not notice.

However, when a person pauses for a moment and asks a simple question – what is actually present in the air around us? – an entirely different world suddenly opens up.

Scientific instruments have long shown that air is not empty. It is full of microscopic particles, molecules, reactions and processes. Some arise naturally in the landscape; others bear the imprint of human activity.

These processes are real. We simply do not usually see them.

Now imagine the moment when something from this invisible world appears before our eyes. A small volume of liquid. A delicate structure. An unexpected sediment. Something formed from the air that, only a moment ago, we regarded as empty.

At such a moment, our way of thinking changes. Air is no longer an abstract concept. It becomes an object of observation.

It is precisely at moments like these that genuine learning begins. Not because someone has explained a definition, but because a question has arisen.

What is it?

Where did it come from?

Is it the same everywhere?

Does it change?

This is how every science begins: not with a great discovery, but with a simple observation that sparks curiosity. And curiosity is the engine that has driven knowledge for centuries.

When an experience like this enters a school environment, something interesting happens. A subject that had previously been merely a chapter in a textbook suddenly comes to life. Pupils begin to discuss. To compare. To look for differences between places. To consider what influences the environment around them.

At that moment, it is no longer merely a matter of the curriculum. It is a matter of discovery.

Some notice the colour. Others the structure. Someone asks a question that nobody had noticed before. And this is precisely how scientific thinking develops – naturally, without being imposed.

In the modern world, we have an immense quantity of data at our disposal: graphs, sensors, models and satellite measurements. All of this is important. Yet sometimes all that is needed is a simple moment that allows a person to see something with their own eyes. Such a moment can change the way we think about the world.

The air surrounding us is a dynamic environment full of stories. Some are natural – the wind carries dust from the landscape, water droplets carry microscopic particles and plants release substances,

which react in the atmosphere. Other stories arise in cities, in transport, in industry and in people's everyday activities.

When these stories become observable, they cease to be a remote subject. They become part of the conversation. Of questions. Of interest.

Perhaps it is at moments like these that a future scientist is born. Not because they planned it, but because one day they saw something that compelled them to ask questions.

The scientific mechanisms that explain these processes are known and described in detail in the specialist literature. Aerosol transport, vapour condensation, the formation of condensation nuclei, the diffusive motion of particles and Brownian motion – all are fundamental processes in atmospheric physics. Detailed explanations of them belong in scientific texts.

But the experience of observation belongs to everyone.

When air becomes the object of discovery, it ceases to be taken for granted. It becomes a question. And every question is the beginning of knowledge.