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Research report

Urban Heat Island effect

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Background

"Have you ever felt the heat in a city on a sunny day? This is because cities have a lot of buildings and roads, which absorb heat from the sun and make the city warmer than the surrounding areas. This is called the urban heat island effect. In this research, we will explore why cities are hotter and what we can do about it."

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What is an Urban Heat Island?

An Urban Heat Island occurs when a city experiences much warmer tempretures than nearby rural areas. The difference in temperature between urban and less-developed rural areas has to do with how well the surfaces in each environment absorb and hold heat.

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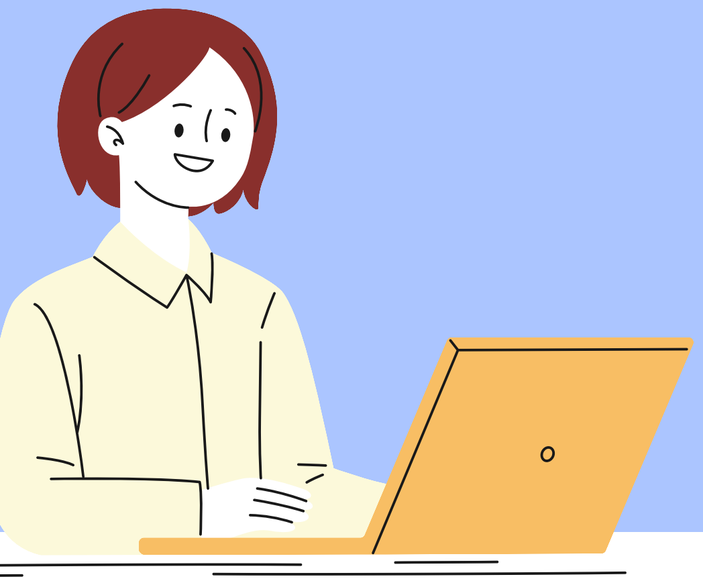
our Research question:

what is The effect of shading type on the reflected ground temperature?



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Theoretical basis

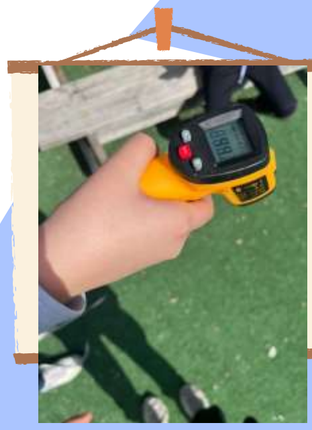
Cities are getting hotter because of many factories. Because of the industrial thighs that absorb neat and the lack of green spaces.

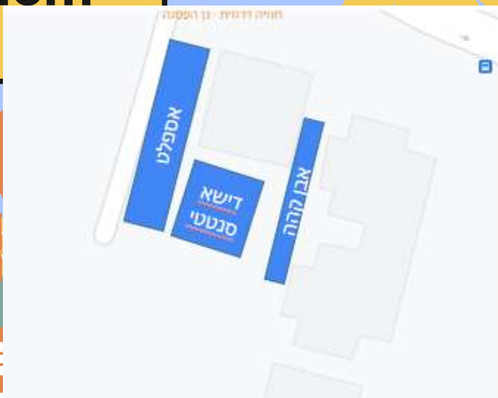
Structures such as buildings,roads and other infrastructure absorb and re-emit the sun’s neat more than natural landscapes such as forests and water bodies

Urban areas where these structures are highly concentrated and greenery is limited become “islands” of higher tempretures relative to outlying areas.

Research methods

To carry out the research we used a device to measure the temperature returning from the surfaces, we chose three types of surfaces: artificial turf, concrete and asphalt, we divided them into three categories: sunny, shaded by trees and shaded by a building. In each category we measured the return temperature in three places. We put the results in a table and then we added them to the Globe site.





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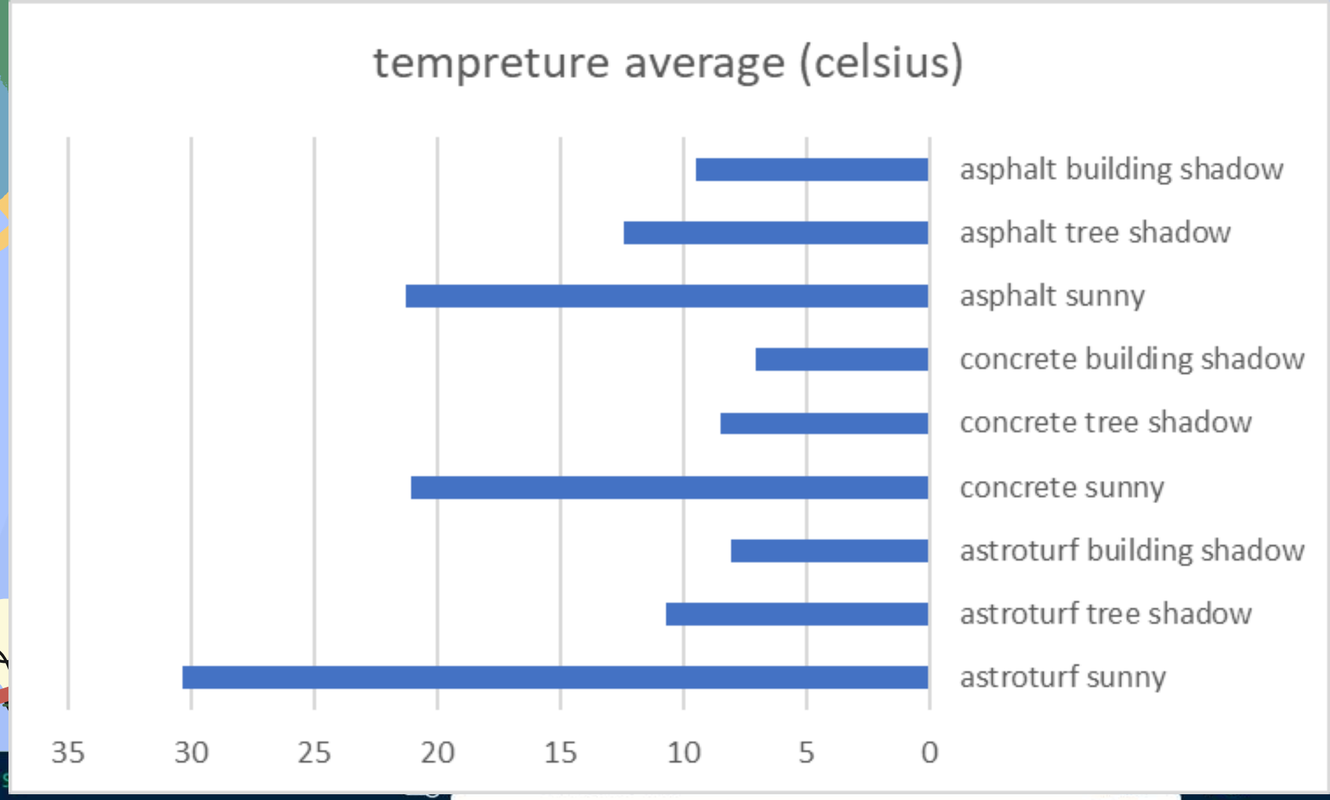
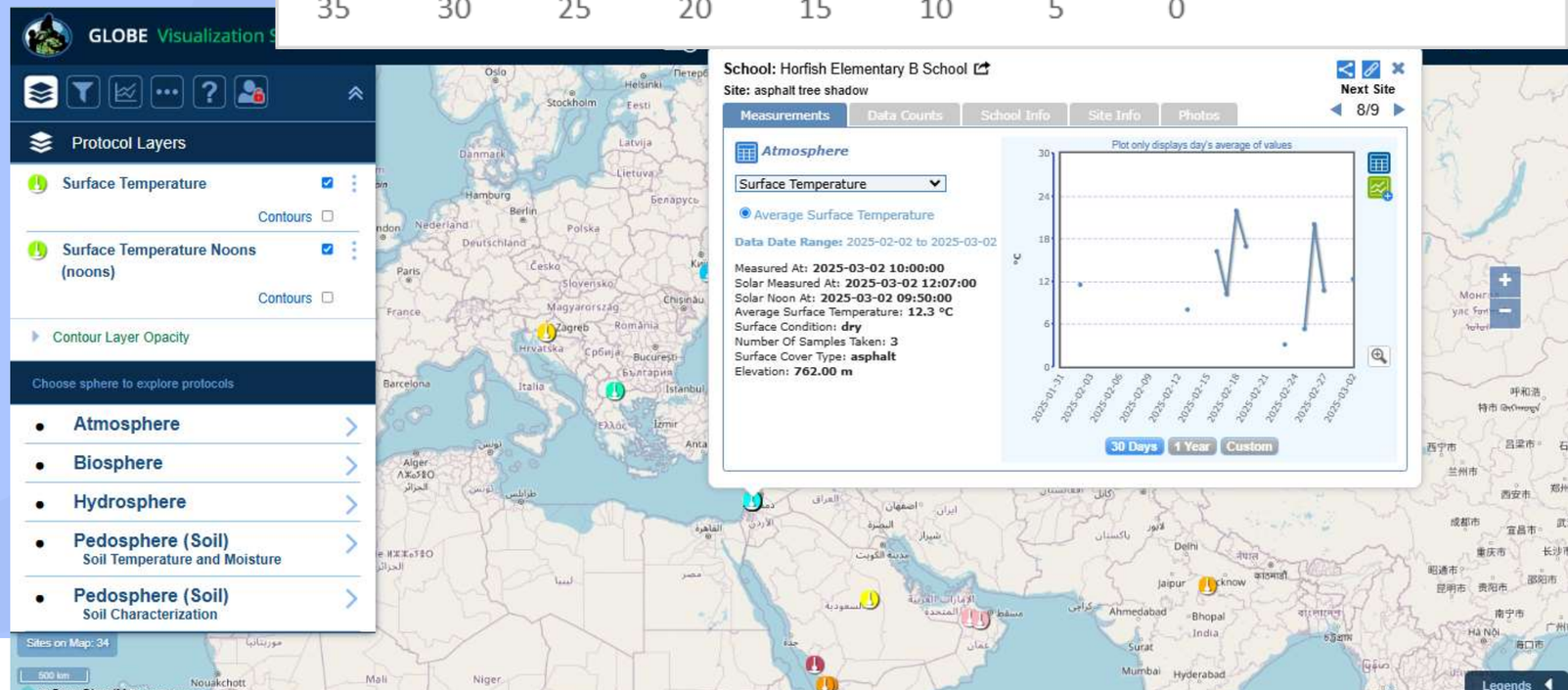
Data

According to the results, it appears that artificial turf reflects much stronger heat than concrete and asphalt. In the second degree, the asphalt reflects more heat than the concrete.
As for the types of shading: without shading the temperature is high, and in the shade of the trees the temperature is higher than in the shade of the building.





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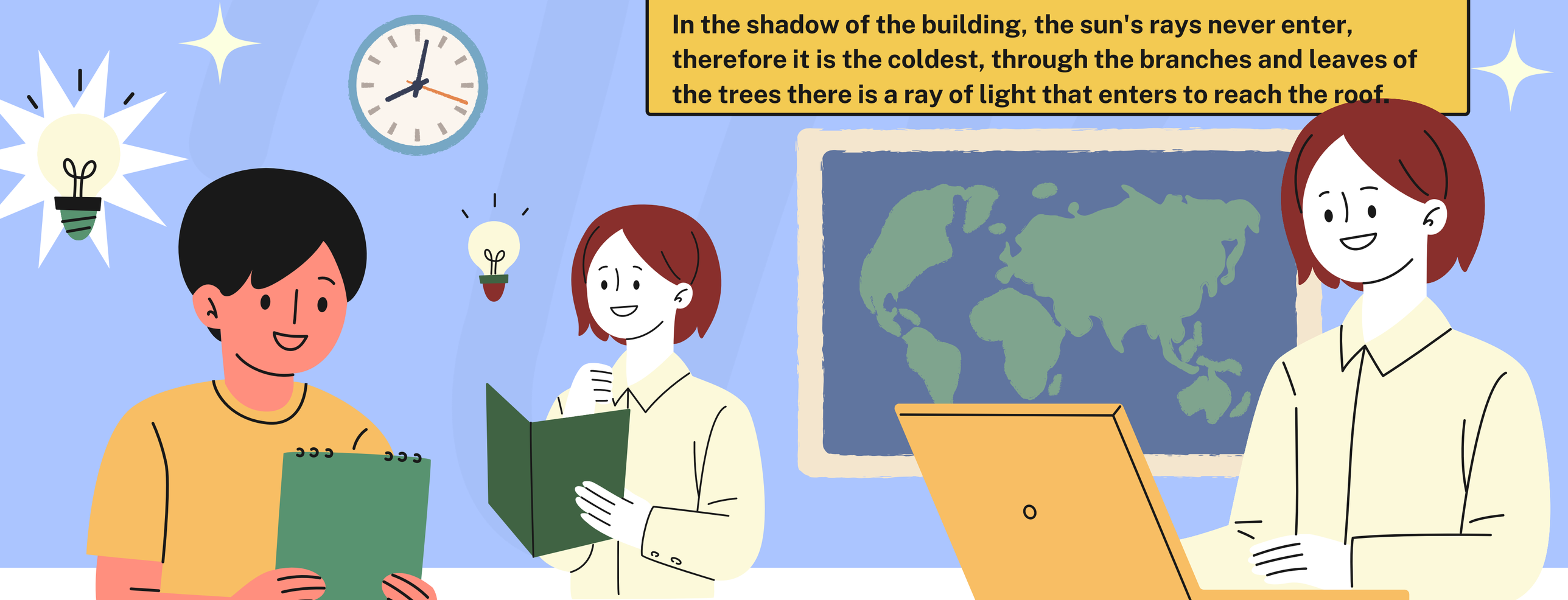
Explanation

The artificial turf emits substances that increase the heat island effect because it is made of plastic and nylon materials, so we feel very hot near it.

The asphalt is dark black and the dark colors absorb heat and sunlight more than the light colors, so the air near it is warmer than the air near the concrete, which is a little lighter in color.

In the shadow of the building, the sun's rays never enter, therefore it is the coldest, through the branches and leaves of the trees there is a ray of light that enters to reach the roof.



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What can we do to make Cities Cooler?

According to the results, it is preferable to shade the surfaces with arish or brick to prevent sunlight from entering it and to keep the place cool, but these surfaces also collect sunlight from above, so it is preferable to have a light color.

But in our opinion it is better to plant the trees even if they let in some of the sunlight because they release oxygen into the air and take the carbon that affects the air temperature.

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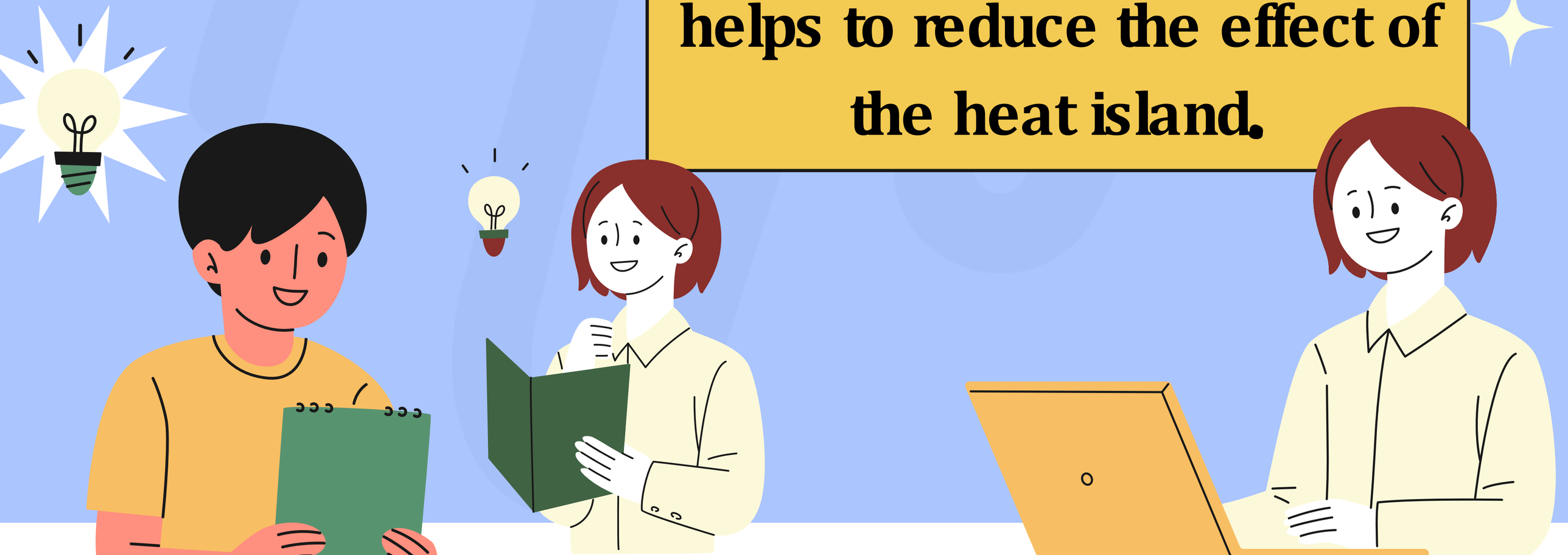
Conclusion

Artificial turf greatly affects the heat island.

Shading in various ways helps to reduce the effect of the heat island.



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bibliography

presentations of the teacher

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Research Documentation

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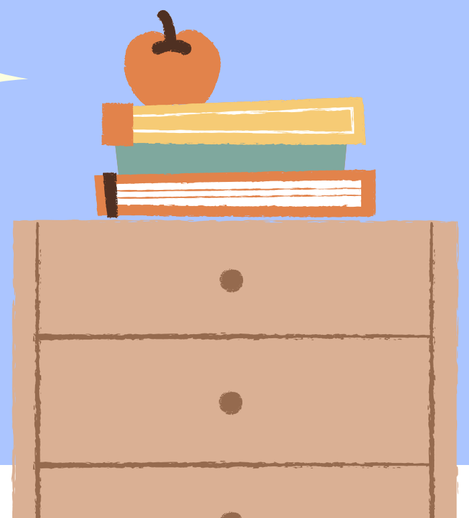
Thank You



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