

TEMPERATURE VARIATIONS AT SCHOOLS IN LANZAROTE

Variaciones de temperatura en los centros de la isla de Lanzarote

4º ESO AICLE – IES TINAJO

INTRODUCTION

Relevant differences in weather conditions among different areas are known as **microclimates**.

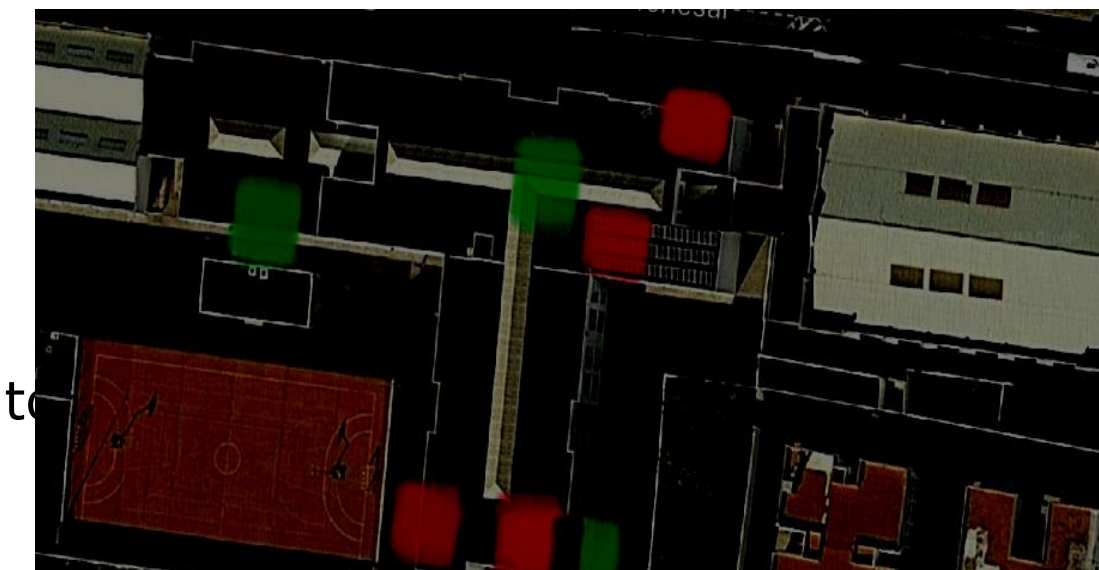
Although Lanzarote hasn't got high mountains and there is not a clear difference between windward and leeward, the divergences in weather measurements can be significant. In addition, building orientation may cause great variations between different rooms.

The aim of this study is to find out whether there are **significant variations between locations and different areas of the same school**.



MATERIALS AND METHODS

Thermometers were placed in places with different orientation on different floors trying to minimize direct sunlight and air currents. Data were collected at 8:00 and 14:00. Data were represented in a line graph and monthly arithmetic means were calculated.



Red square: Upper floor
Green square: Lower floor

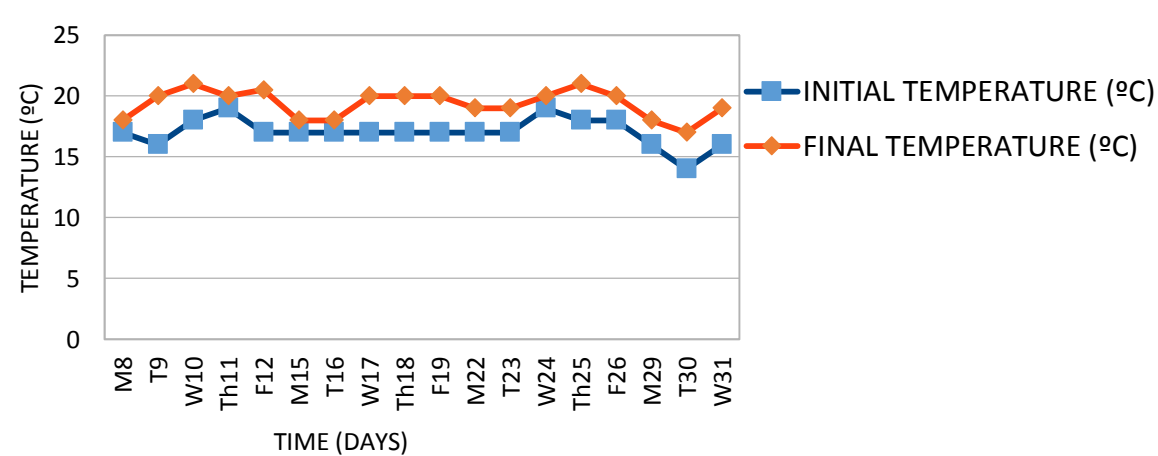
RESULTS

Daily temperature variations at IES Tinajo between October and March are not highly significant, although it is slightly higher at rooms in the north-south orientation than in the east-west orientation.

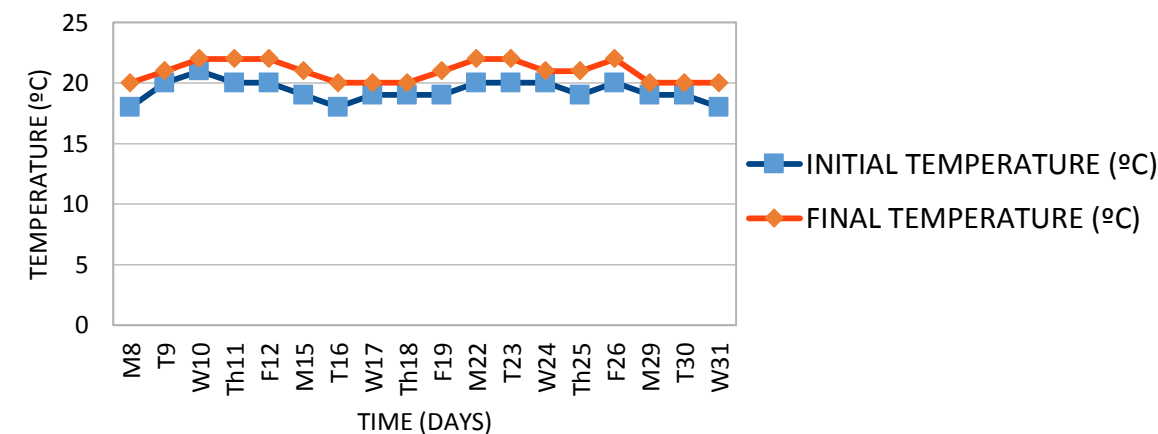
NUMBER OF DAYS WITH 3°C OF MORE OF TEMPERATURE DIFFERENCE					
	NOV	DEC	JAN	FEB	MAR
1ºA	7	3	8	4	2
2ºA	5	4	9	0	4
4ºA	2	1	5	2	6
MEDUSA	6	2	2	6	4
ORI	0	0	1	0	0
1ºBACH	2	2	3	2	4
PASILLO	2	2	0	2	9
	24	14	28	16	29

The following table shows the number of days in which temperature difference between 8:00 and 14:00 hours was equal to or greater than 3°C. It should be noted that classrooms 1ºA and 2ºA (upper floor) and classroom 4ºA (lower floor) located in the north-south orientation have recorded the greatest oscillations with differences in monthly average temperature equal to or greater than 2°C. However, Medusa, Orientacion, 1º Bach and Pasillo, all of them in the east-west orientations recorded temperature variations less than 2°C.

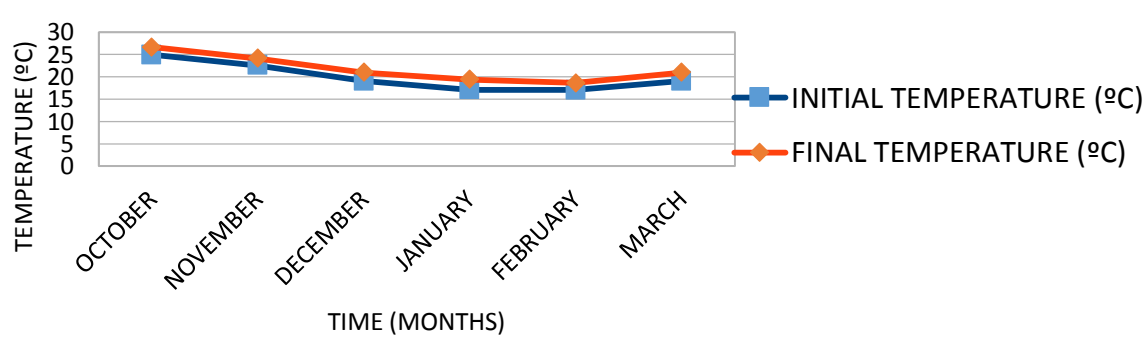
JANUARY



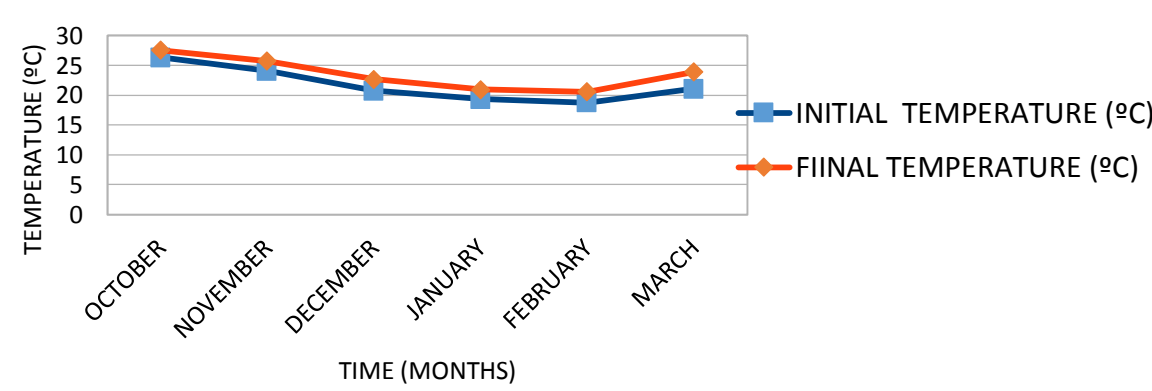
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MONTHLY AVERAGES



MONTHLY AVERAGES



It is noticeable that January has recorded the greatest number of days with 3°C or more of temperature variation from 8:00 to 14:00.

The highest variation of monthly average temperature was 2,8°C and it was recorded by the thermometer located in the east-west Pasillo directly under a polycarbonate sheet.

CONCLUSIONS

These results show that temperature variations throughout the day can be significant and it can be affected by the structure, orientation and building materials.

It is expected that the differences in records between 8:00 and 14:00 will increase from March onwards and that they will be more evident in the north-south orientation, in the upper floor of the building and in the pasillo due to the greenhouse effect caused by the roof.

It would be convenient to use digital thermometers to improve the accuracy of data collection, as well as to increase the number of thermometers.

It is necessary to collect more data in order to confirm the hypothesis. Likewise, records at the IES Tinajo should be compared with other secondary schools in Lanzarote to verify if there are significant variations according to the location.