

## Temperature Control and Comfort Level of Elementary School Building with Green Roof in New Taipei City, Taiwan

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**Abstract :** To mitigate the urban heat island effect has become a global issue facing the challenge of climate change. Through literature reviews, plant photosynthesis can reduce the carbon dioxide and mitigate the urban heat island effect relatively. Because there are not enough open space and park, green roof has become an important policy in Taiwan. We selected elementary school buildings in northern New Taipei City as research subjects since elementary school is asked priority to build green roof and important educational place to promote green roof concept. Testo 175-H1 recording device was used to record the temperature and humidity difference between roof surface and interior space below roof with and without green roof for the long-term. We also use questionnaire to investigate the awareness of comfort level of green roof and sensation of teachers and students of the elementary school. The results indicated the temperature of roof without greening was higher than that with greening about 2°C. But sometimes during noontime, the temperature of green roof was higher than that of non-green roof related to the character of the accumulation and dissipation of heat of greening probably. The temperature of interior space below green roof was normally lower than that without green roof about 1°C showed that green roof could lower the temperature. The humidity of the green roof was higher than the one without greening also indicated that green roof retained water better. Teachers liked to combine green roof concept in the curriculum, students wished all classes can take turns to maintain the green roof. Teachers and students that school had integrated green roof concept in the curriculum were more willing to participate in the maintenance work of green roof. Teachers and students who may access and touch the green roof can be more aware of the green roof benefit. We suggest architect to increase the accessibility and visibility of green roof, such as a part of the activity space. This idea can be a reference of the green roof curriculum design.

**Keywords :** comfort level, elementary school, green roof, heat island effect

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