

## Abstract

This thesis is aimed to study the design of small kindergarten that promotes natural ventilation. The study consists of 2 parts: 1) the survey of physical environments in order to study problems and contemporary architectural types 2) the study of architectural elements such as fences, door location, building forms, and opening ratios that affect building's ventilation by using a Computational Fluid Dynamics (CFD) program.

The survey from the first part shows that there are three types of building forms: U-, L- and I-shape. The buildings have two stories with the room size of 7 x 9 m, and 20% of opening. The result from the second part shows that the most effective type of fence for natural ventilation and kid's safety is a round section with 5 centimeters in diameter, and the gap between each fence bar is 10 centimeters. The location of each door should be 1.50 meters from a wall. The best building orientation that provides maximum ventilation is to face its frontage to the south. In addition, the U-shape with 50% of opening ratio is capable of providing good ventilation in almost all directions.

The result of the study leads to a design guideline for small kindergarten with an emphasis on architectural elements, building forms, and building orientation that promotes the efficiency of natural ventilation.