

## Graduation Process

The graduation topic "Childhood myopia and light exposure in school environments" is related to indoor climate, computer modelling and design. These subjects are very relevant in the master track Building Technology because almost all courses are related to them. Combining it with a design task is characteristic for the master programme AUBS.

The research approach worked out, but a few difficulties have come forward. First of all, the modelling of the school classrooms and setting up the script in Grasshopper took a lot of time. What is missing in this thesis, is the electric light part because the component needed for that only runs on older versions of Rhinoceros and Grasshopper, which meant that the whole script had to be changed to the older components. Due time management, this was not possible anymore.

Running the simulations took a lot of time. Looking back, it would have been better to set up a script to run them automatically.

The SWOT analysis is summarized in the table below.

Strengths	Weaknesses	Opportunities	Threats
3D model finished	Artificial light not included in Honeybee	Making script run automatically	Artificial lighting simulation not possible in new versions
A lot of measurements	Running simulations not automatically		Weather data only available from satellite
Learned a lot about 3D modelling			Setting up model takes a lot of time
			Slow communicating with external parties

Because the measurements needed to be done inside schools, there were external parties involved. Emailing the school and waiting for replies took much time. The heads of these schools gave me eventually permission, but this was not always communicated with the teachers. They sometimes were a little irritated because I taped the HOBO measurements devices on the wall of their classroom. Although I had permission, I apologised and explained it.

## Societal impact

The research showed what the design of new school buildings can include to reduce the development of myopia. Existing schools can consider some easier to imply improvements. This research will hopefully raise more awareness about childhood myopia and its relationship with (school) buildings. If that is the case, it will change the way architects design buildings and its environment.

The topic of childhood myopia development is relatively new and upcoming and if nothing is done, half of the world population will have myopia by 2050. This will eventually lead to many people with eye disorders or even blindness. For the well-being and health of all the people, hopefully research done now can prevent this in the future. With this research, I hope to add a little bit of information gathered from Dutch school buildings about their current situation and where there is room for improvements. This can help in the bigger research to prevent myopia. The project does therefor contribute to more sustainability.

The specific research that I did has never been done before; measurements in existing school buildings in the Netherlands and giving design recommendations for improvement based on simulations in Grasshopper and ranking them in a matrix.